THE MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—20TH YEAR. SYDNEY, SATURDAY, FEBRUARY 25, 1933. No. 8.

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The Beattie-Smith Lectures.[1]

(UNIVERSITY OF MELBOURNE.)

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LECTURE I.

MONT PARK MENTAL HOSPITAL AND ITS INMATES.[2]

WE meet here tonight to honour the memory of the late Dr. Beattie-Smith and to carry out the terms of his bequest to the University. It was Dr. Beattie-Smith's wish, you will remember, that a few lectures should be given annually to medical practitioners and the general public dealing with the treatment of insanity, and I thank the Faculty of Medicine very sincerely for the honour they have conferred on me by inviting me to deliver the lectures for the current year.

Before I begin my lecture, I should like to show you on the screen a photograph of the late Dr. Beattie-Smith to remind you of the distinguished clinician and administrator who for twenty years was medical superintendent at the Hospital for the Insane, Ararat, and later for five years occupied the same position at the Hospital for the Insane, Kew. In 1902 he left the Lunacy Department to become a consulting psychiatrist in Collins Street, where he had a large and successful practice. Dr. Beattie-Smith never married and his work was at once his hobby and his chief interest in life. At Ararat he introduced many important reforms including the adoption of the cottage system and the employment of female nurses in the male hospital wards. He was indulgent and charitable towards ordinary human frailties, but he was a strict disciplinarian and was implacable in his hatred of cruelty in any form in the treatment of patients.

[1] Delivered on November 15, 1932.

[2] The lecture was illustrated by lantern slides depicting the buildings and various activities of Mont Park.

I think it would be wise for me right at the outset to give you some idea of the general plan of my lecture so that you may say "though this be madness, yet there is method in it".

I propose to begin with a short discussion of the meaning of the terms mental disease and insanity, and after that to mention the purposes for which a mental hospital exists, and the principles upon which it should be constructed, and to give you a general conception of Mont Park, its layout and design, and an impression of the men who control it. I will next try to tell you something about the patients and their treatment, and finally, by the aid of lantern slides, I will endeavour to take you round the hospital in the same way as the Medical Superintendent might take round a privileged group of visitors.

Mental Disease and Insanity.

Before trying to tell you about Mont Park and the patients who live there, it seems desirable that you should have a clear conception of the meaning of the terms mental disease and insanity, for I can assure you that many visitors to Mont Park have the most erroneous ideas in regard to both terms. The term insanity is used in two senses, sometimes to denote a disease and sometimes to denote a symptom of unsoundness of mind. A person may ask the question: "What is poor Smith suffering from?", and may receive the answer: "I fear it's insanity" (meaning a mental disease of some kind); or, again, a person may be asked his opinion of a projected course of action and may reply: "Oh, that would be insanity" (meaning an indication of unsoundness of mind).

I hope you will not be impatient with me if I approach the definition of a mental disease through the analogy of a skin disease. When we speak of skin diseases, we do not mean diseases that are confined to the skin, but diseases which have this much in common that a skin eruption is the most arresting feature in the symptomatology of each of them. We recognize that the different skin diseases are biologically and medically quite distinct. We do not, for example, lump together urticaria and scabies, rodent ulcer and ringworm, psoriasis and measles under the general heading "eruptivity", nor do we call the victims of such diseases the "eruptive". Like skin diseases, mental diseases are many and various, having totally different causes and different courses; the only relationship they have with each other is that amongst their symptoms are conduct disorders of a kind which by common consent are regarded as insane.

By a "mental disease", then, we mean a disease in which the most striking but by no means the only symptom is disorder of conduct. From the disorder of conduct we infer the existence of mental changes, but in every mental disease there are always changes in the organs and tissues of the body as well, and these bodily changes may be by far the more important and may often constitute the very essence of the disease. The different mental diseases, such as *dementia præcox*, manic depressive insanity, general paralysis of the insane and arteriosclerotic dementia, have biologically and medically nothing to do with each other and yet, in sharp contrast to what we found to be the case with skin diseases, legally and in the public mind, all these diseases are grouped together under the general heading "insanity" and their victims are spoken of as the insane. The reason for this lies in the fact that insanity is not a medical term at all, but a legal term. The law is not interested in mental diseases as such; it is all one to the law whether the patient is suffering from primary or secondary dementia, mania or melancholia; it wants to know whether a patient understands the difference between right and wrong, whether he is competent to manage and dispose of his property, whether he is a danger to himself and others. So much for insanity the disease. Insanity as it manifests itself to the world, that is, insanity as a symptom of unsoundness of mind, is one of the hardest words in the language to define and no satisfactory definition has as yet been arrived at. An English judge once expressed the opinion that it was beyond the wit of man to devise such a definition. It may be defined broadly as the inability of an individual through unsoundness of mind to adapt himself to his ordinary environment. Insanity is often called disorder of mind, and this it is, but it is more than this. In the words of the late Dr. Mercier:

> Were it disorder of mind alone we should not be called upon to treat it, for we should know nothing about it unless we happened to be subject to it ourselves. What goes on in the minds of other people we can never know unless and until it is revealed to us by their conduct. Only by disorder of conduct can we infer the existence of disorder of mind, and when conduct is disordered we may safely and immediately infer the existence of insanity without stopping to investigate the condition of the mind.

If, for example, we were to meet an archbishop in dishevelled attire striding down Collins Street beating a drum and shouting: "I am the prophet Isaiah", we would have no hesitation in considering him insane; but we could not tell without further investigation the exact state of his mind and still less the particular mental disease from which he was suffering. Conduct, then, is the main thing that is disordered in insanity, and it is only when conduct is so disordered that the individual becomes a nuisance or a danger to himself or others that he comes into conflict with the law and has to be certified insane. One cannot inherit "insanity", but only a tendency to develop some particular mental disease.

The Construction of a Mental Hospital.

The purposes for which a mental hospital exists cannot be better summarized than has been done by the late Dr. Mercier in his book, "Lunatic Asylums, Their Organisation and Management", published in 1894. Dr. Mercier uses the term lunatic asylum where we would nowadays say mental hospital. He states:

> With regard to the principles upon which an asylum should be constructed, regard must, of course, be had exclusively to the objects that it has to serve, and since

a lunatic asylum is a place for: (i) The detention, under (ii) care, and (iii) treatment, of persons who (iv) are disposed to be either melancholy or turbulent, (v) have tendencies to injure themselves or others, (vi) are unable to protect themselves from ordinary sources of danger, and (vii) in very many cases have to spend most of their lives in it.

It is evident that the principles upon which it should be constructed are: (i) To make it a healthy residence; (ii) to provide for the complete and continuous supervision of its inmates; (iii) to facilitate treatment; (iv) to allow of the separation of the patients into small groups; (v) to exclude opportunities for self-injury and violence; (vi) to remove, as far as possible, sources of danger; (vii) to make it bright, cheerful, and comfortable; and (viii) to attain these objects with the strictest regard to economy, both of original expenditure and of subsequent working.

The Mont Park Mental Hospital is built on an estate of about 1,300 acres splendidly situated about three miles in a north-westerly direction from Heidelberg. It is close enough to town to be accessible to the patients' relatives and far enough out to possess the advantages of country air and surroundings. The country is undulating with magnificent views of the Dandenong Ranges toward the north-east.

The layout of Mont Park differs from that of most mental hospitals in being extraordinarily scattered, the various sections being widely separated from each other. It is the very antithesis of the barrack-like institutions of former days. This state of affairs, although it renders administration rather more difficult, has many advantages, giving an impression of openness and minimizing the feeling of confinement. Most of the buildings are grouped around a central park which has only recently been planted, but which will ultimately form a very attractive feature of the institution. We will deal with the patients' portion of the hospital first. The main building consists of a series of blocks arranged *en echelon* in a form of a great crescent. It is divided into two halves, devoted to the care of the male and female patients respectively, with a sub-administrative block in between, containing the laboratory, the offices of the assistant medical officers, the dental surgery, the ultra-violet light room, the telephone switch room, the dispensary, the head attendant's office, the attendants' mess room, and the central kitchen. The wards on each side are similar in construction and consist of day rooms, dining rooms, dormitories and single rooms, bathrooms and sanitary annexes.

The most important wards are: (i) the admission wards, with their observation dormitories for suicidal, epileptic and dangerous patients; (ii) the infirmaries for the sick, the crippled, the aged and the feeble. The other wards are for the chronic and working patients.

In addition to the main building there is a large paying patients' block for women, with a preponderance of senile patients, a laundry workers' block, a farm workers' block, and accommodation for soldiers at the military mental block and Bundoora.

Lastly, there is the New Hospital block, of which Mont Park is justly proud. This is a modern building, opened as recently as 1926, and its design will compare favourably with that of any similar structure in any part of the world, one of its best features being the magnificent verandas, on which patients can have treatment by rest in the open air. It has a male side and a female side, and is staffed throughout by female nurses. Here, as it should be, the conditions are indistinguishable from those of a general hospital. The New Hospital is used for the accommodation of voluntary boarders, for patients undergoing special or new forms of treatment, and for patients suffering from surgical or medical illnesses, the treatment of which demands facilities and attention not available in the ordinary infirmary wards.

There are still some very important additions that Mont Park needs before it can take its place in the very front rank of the world's mental hospitals. Of these I shall mention only the most urgent, namely, two new admission hospitals, one for male and the other for female patients. If these blocks were available, it would permit of the complete separation of the recent and presumably recoverable patients from the rest. Each block would be built on the lines of a general hospital and would be provided with the maximum possible veranda accommodation so that the modern doctrine of the treatment of the acute phases of mental disease by rest in bed in the open air could be adhered to.

First impressions are quite as important with the insane as with normal people. To be received into a building obviously equipped just like an ordinary hospital and to be put to bed and medically examined as if for an ordinary bodily illness would go far to remove the apprehension with which a patient naturally regards his admission to a mental hospital, which has all the terror of the unknown. When they first come to hospital most of the patients are desperately ill, ill in body and ill in mind, and this is the kind of treatment to which they have a right and the only kind of treatment which should be offered them. In addition to the patients' part of the hospital there are the nurses' home, the main administrative block, the store, the engineers' shop, the laundry, the different workshops, and the private dwellings of the Medical Superintendent, the assistant medical officers and other resident members of the staff.

The Men Who Control Mont Park.

The success of any enterprise depends upon the men or women at the head of it, so I should like just to refer to the three men who control Mont Park. I would like to tell you also about the nurses and attendants, who are the backbone of any mental hospital and upon whose competence and good will the happiness and welfare of the patients ultimately depend, but time will not allow me to do so, nor to mention the indispensable work of the assistant medical officers or of the heads of the various non-medical departments, without which the hospital could not carry on. In talking of Mont Park one naturally thinks first of Dr. Jones, the

Inspector-General of Insane, for Dr. Jones was the founder and designer of Mont Park, and if in the fullness of time he should ever need a memorial, then Mont Park will be a not unworthy one.

Dr. Jones, as you know, is head of a great department, and the supervision of Mont Park forms but a fraction of his work. He controls and directs its general development and is ever eager that it should maintain its position in the van of progress. He is the only person to whom the Medical Superintendent can go for advice and help in dealing with the innumerable difficult problems which arise from day to day, problems of discipline, problems connected with the admission and discharge of patients, problems of accommodation and equipment. Lastly, being relatively remote and inaccessible, he can be blamed by the medical officers for the non-discharge of certain troublesome patients who consider that they ought not to be detained, and he can be held responsible for many other matters of which he has perhaps never heard.

The Medical Superintendent is the head of the personnel of a mental hospital. Like the headmaster of a school, he sets the tone of the whole institution, and the welfare and happiness of the patients depend upon him more than any other member of the staff. The competence of a medical superintendent may be estimated in many ways, according to one's point of view, for example, by the highness of the recovery rate or the lowness of the maintenance rate. Personally, I think that the ultimate criterion by which a superintendent should be judged is the happiness or unhappiness of the patients and staff. Judged by this test, Dr. Catarinich will not be found wanting. He must early have decided to obey the injunction of the poet to "fetter strong madness in a silken thread", for of all the mental hospitals I have known Mont Park is by far the most free.

After the Superintendent, the Secretary is the next officer in importance in a mental hospital. He combines the duties of a clerk and a steward. The position calls for a man of wide experience, of administrative capacity and of proved integrity, and Mont Park is fortunate in possessing in the person of Mr. Bradley a Secretary who has all these qualifications and outstanding personality as well. Mr. Bradley has done much to keep up the general morale of Mont Park, for slackness and extravagance in any form find no sort of support from him. It is much to be regretted that he will shortly be retiring from the service, having reached the superannuation age.

The Patients at Mont Park.

I must now keep my promise to tell you something of the fifteen hundred and forty odd patients in Mont Park. I will begin by telling you what they are not.

(1) They are not wild beasts, and yet quite a proportion of the general public seems to regard them as such, as witness the agitation that arose a few months ago when it was sought to establish a private mental hospital at Brighton for the reception of a few quiet male patients. The whole neighbourhood was up in arms and protested to the Chief Secretary as if an outrage was about to be practised upon it. Such behaviour is due partly to ignorance and partly to the selfish avoidance of insanity which is so general. Motorists as they drive through Mont Park often stop their cars and stare at the patients in the airing courts and point at them as they would at animals in the zoo, as if they were no longer human, no longer brothers and sisters, fathers and mothers.

As a matter of fact, the great majority of insane patients are no more likely to murder a person or to do anyone any harm than the ordinary man in the street. It is a mockery that the really dangerous persons are not sent to mental hospitals or, if they do reach the mental hospitals, it is only after they have done their worst.

A melancholic mother who is thought to be merely low spirited kills her children in order to save them, as she believes, from misery on earth or to send them to happiness in heaven. Or a man having the delusion that he is being deceived by his wife, goes steadily about his work and is thought by his friends to be perfectly normal or at the most a little moody and preoccupied, until some day, in a paroxysm of rage arising out of his delusion, he murders his wife.

(2) They are not persons who are tormented by evil spirits, although the doctrine of demoniacal possession still has its adherents even at the present day.

(3) They are not people who are being punished by God in consequence of some great sin, in spite of the self-accusations of the unfortunate victims of melancholia. "Insanity", as Dr. Yellowlees has said, "is a disease and not a doom."

(4) They are not persons with no sense at all. They are not necessarily fools. An insane person is not a being totally different from a sane person; he is merely an ordinary individual whose mental processes for some reason have become disordered in a greater or less degree. He may perform acts which to the normal man are totally inexplicable; but if the reasons for these acts can be discovered, as they sometimes can, it will be found that they are the logical results of faulty mental processes. In many instances a patient may have quite good judgement about matters unconnected with his own complexes, and I for my part have no hesitation in applying to some of them for advice about subjects in which they are expert.

I should like to say a few words about the attitude one should adopt in dealing with insane patients.

You will not, of course, speak of them as lunatics, for the word lunatic implies that the illness is caused by the moon, and I am sure you would not wish to identify yourself with such a view of the pathology of mental disease. Do not be silly and address them as if they were children or as if they were destitute of common sense.

You will not, I trust, betray your ignorance of the insane by attempting to humour or to soothe them. Nothing annoys an insane person more. Imagine the exasperation of a patient suffering from delusional insanity who is urgently demanding an interview with the Commissioner of Police on the ground that he is being illegally detained, when he is told: "Don't worry, I'll see to it"; or the feelings of an old lady suffering from agitated melancholia, who wants to leave the hospital at once because, as she thinks, her house is on fire and her children are being murdered, when she is put off with the soothing remark: "Yes, yes, it will be all right." I hope that you will not treat them merely with compassion, but with charity, the charity that suffereth long and is kind, the charity that thinketh no evil, and one's charity should be stimulated by the certainty that one would do no better one's self if one's circumstances were the same.

Do not treat them as persons apart, but as brothers. Treat them as if they were sane, as one gentleman would treat another.

Often one hears a visitor after a conversation of a minute or two with a patient say: "I see nothing the matter with him", and he goes away with a feeling of doubt at the back of his mind as to whether sane people are not being improperly detained in the hospital.

In this connexion I may be allowed to describe an experience of my own.

When I first began to study mental diseases, I attended a lecture demonstration by the late Dr. Steen at the City of London Mental Hospital. One of the patients brought forward was a quiet, neatly dressed middle aged man, who answered all the questions put to him rationally enough, and we students could not see anything wrong with him. After about ten minutes' talk, Dr. Steen seemed to despair of demonstrating his insanity, and told him he might go. He had no sooner reached the door than he was dramatically recalled. Dr. Steen said to him: "Is it true, Mr. Smith, that you are Mephistopheles?" "Perfectly true", replied the patient. "I was down in hell only yesterday." After breaking the ice in this way, he began to express one delusion after another concerning his wife's infidelity and to speak of the dire retribution he intended to exact from her supposed seducers. As a matter of fact, shortly before he was certified insane he had made a murderous attack on his wife in the entirely unjustified belief that she was unfaithful to him.

Another type of patient who often gives rise to doubts in the minds of visitors is the manic depressive, who between attacks appears almost normal.

As an example, I might tell you of a patient who at one time used to help with the work of my house. She was a somewhat irritable, hard working, shrewd old lady whom anyone might have supposed to be normal. For a few months all went well; then, for no apparent reason, she seemed to become unsettled, showed a new and undesirable activity and began to interfere in matters that did not concern her. Her manner, which had previously been respectful, became pert and flippant and often thoroughly impudent; she would sweep the kitchen floor with a swish and impatiently slap all the crockery into the sink regardless of its integrity. At this stage she had to retire to the wards with an attack of mania.

Still another type of patient is one who is called "asylum sane", a person who can adapt himself quite all right to the ordered routine of a mental hospital, where he has no responsibility, and no initiative is expected of him, but who breaks down at the slightest strain and who is quite unable to fend for himself in the outside world. For such persons the mental hospital is a place of refuge, and it would be wrong indeed to turn them adrift with the certainty of inflicting a severe illness upon them.

The idea that sane people may be detained in a mental hospital is a chimera, and has no foundation in fact. If there were a possibility, then it would be eliminated by the official visitors, Dr. Joske, Dr. Howard and Dr. Springthorpe, who regularly visit the hospital, and who grant an interview to any patient who asks for one. The official visitors report direct to the Chief Secretary and not to the Inspector-General of the Insane.

While we are on the subject of safeguards, I might mention that it is the law that a *post mortem* examination should be made on all certified patients dying in the hospital and this is followed in each case by a coroner's inquest. In this way it is rendered impossible that any patient should die as the result of an injury without it becoming known.

It is not infrequently said that it is easier to get into a mental hospital than to get out of it. This is true only in the sense that many mental diseases are, in the present state of our knowledge, incurable, otherwise nothing could be less in accordance with the facts. If the patient has insight, recognizes that he is ill and desires treatment, then it is a simple matter to enter Mont Park as a voluntary boarder. All he has to do is to go to the hospital, say that he is feeling ill mentally, and desires treatment and he will be admitted on signing the voluntary boarder form. He can leave whenever he likes by giving the Medical Superintendent three days' notice in writing that he wishes to go. But if he has not got insight and is not willing to go, then the relatives will first have to get him certified insane by two medical men independently, and this is a troublesome business. The medical certificates must be made out on certain prescribed forms, and the relatives will not know where to get them. Then the family doctor, like other doctors, probably detests having to certify anyone insane, and if he thinks he may be called upon to do so he will very possibly decide to take his annual holiday right away. When the doctor calls to see the patient for the purpose of certifying him, the latter will most likely show some temporary improvement, will have a lucid interval, as it is called, or will pull himself together for the time being and the doctor will be unable to certify him and will have to go away again. The second doctor, who has to be called in, will not know anything about the patient and will be extremely careful about certifying him, and unless he is obviously insane and breaking up the furniture, will refuse to do so. After the certificates are obtained, and the request form and statement of particulars are filled in, there will remain the practical difficulty of transporting the patient to the hospital. In this connexion I should

like to urge the imperative necessity of being strictly honest in dealing with the insane. The patient should be told that he is mentally ill and that it has been reluctantly decided to send him to a mental hospital for treatment. Once the decision is made, there should be no wavering, and he should be taken there by the aid of the police, if necessary. He should not be deceived by telling him that he is going for a motor drive or to a rest home or anything of the sort.

Compared with the difficulty of getting into a mental hospital, getting out is childishly easy. The usual way is for the relatives to apply to have the patient home on trial leave, and then if he gets on all right, have him seen by any outside doctor who signs a form certifying not that he is sane, but that he should no longer be treated under the *Lunacy Act* of 1928 as insane. This certificate is then forwarded to the Medical Superintendent of the mental hospital and nothing further has to be done by the relatives.

Of course, most of the patients at Mont Park come to us *viâ* the Receiving House at Royal Park, and I have dealt only with the procedure for direct admission of an ordinary private case.

Mental Diseases Affecting the Patients.

Mental diseases, as we said at the beginning, are many, having different causes and different courses, and examples of most of them are to be found among the patients at Mont Park.

I should like to tell you about all of them, but the time at my disposal is so limited that I think it would be more profitable to devote most of it to a consideration, however fragmentary and incomplete, of *dementia præcox*, firstly, because of its importance, and, secondly, because, in spite of its frequency, it is less well known to the general public than the more historic epilepsy, or the more spectacular mania or general paralysis, and less familiar than delusional insanity and senile dementia, which so often figure in courts of law.

Dementia præcox is a disease which usually, but by no means always, begins in youth, most frequently between the ages of eighteen and twenty-five. Because they are admitted young and have relatively little tendency either to die or to recover sufficiently for discharge, *dementia præcox* patients tend to accumulate in mental hospitals until they constitute the majority of the chronic inmates.

In regard to the causation of *dementia præcox*, we know that herditary predisposition plays a very important part, that the disease develops most frequently during adolescence, and that emotional stresses and bodily illness have sometimes a precipitating effect. That it is essentially and primarily a bodily disease, there cannot be the slightest doubt, but as to its exact nature and the causes which really engender it we are still completely in the dark.

The mode of onset varies, but is usually insidious and the patient's mental deterioration becomes only very gradually noticeable to his parents. The youth who was previously so industrious and full of promise develops an unaccountable apathy, becomes more and more disinclined for work and is apparently content to idle away his time with no thought for the morrow. A growing estrangement often takes place between the patient and his parents, brothers and sisters; to the latter he appears stubborn and unreasonable, and to have neither affection or consideration for others, and they attribute his behaviour to laziness or want of good will until the development of other symptoms renders his mental illness obvious to all.

The developed disease shows itself in a more or less far-reaching mental deterioration, especially in the sphere of the emotions and the will. The patients are dull and indifferent, show no affection for their relatives nor any interest in their own present or future; they have no initiative and no ambition; all they ask for it to be left alone and allowed to find satisfaction in their own delusional phantasies.

They recognize their friends, they know where they are, they understand what it said to them and remember things perfectly well, but their judgement is much impaired as shown by their absurd delusions. Most of them suffer at some time or other from hallucinations, especially of hearing. Some of them develop states of excitement or depression or pass into a condition of stupor for varying periods. They show all sorts of strange and bizarre conduct disorders, which are grouped together under the heading of catatonic symptoms. As a class they are unsociable, stubborn and contrary, whimsical and eccentric and generally incalculable in their behaviour. Not infrequently they are impulsively violent. Some of them are capable of doing useful routine work, but they do nothing of their own accord, and have to be urged and directed in everything. It has to be remembered that only the more severe cases find their way into the mental hospitals. In the community mild cases of *dementia præcox* are common, and the affected persons frequently appear to recover or recover with defect. Abortive cases are to be recognized in many of those who during their school days seem full of promise, but later fail in life in an incomprehensible way, and in wasters who simply trifle away their time and never hold any of the numerous posts that their long-suffering relatives find for them. They are found in numbers amongst the beggars and tramps of the world. Some of them take to alcohol and under its influence drift into petty crime; others manage to carry on in some subordinate calling and are merely regarded as odd, suspicious and eccentric personalities.

Treatment of the Insane.

It is a common reproach that the patients in a mental hospital receive no treatment, but this is far from being true at Mont Park, and I will try to give you some idea of what is actually done for them.

Hygienic Treatment.

There is the hospital itself, healthily situated with good drainage, abundance of sunshine and fresh air, an attractive outlook and attractive grounds. The airing courts are spacious and allow plenty of exercise, even for those who are not able or not willing to take part in the work of the institution. The dormitories are well ventilated and well lighted, and the beds are clean and comfortable. The food, although sometimes roughly served, is wholesome and ample in quantity. Provision is made that every patient is bathed at least once a week and clean underclothing is provided at the same time.

Disciplinary Treatment.

I do not mean disciplinary treatment in any harsh or military sense, but each patient is taught to realize that he is one of a community and that he has to obey the rules that are framed for the general good. One of the ways in which a patient's mental deterioration shows itself is in a lowering of his morale, he becomes indifferent to his personal appearance, untidy in his dress, and careless in his habits. Recovery seems to him hopeless; in his despair nothing seems to matter, and he lets everything go. Left to himself, he would stay in bed all day, take his food irregularly, if at all, fail to wash himself and drift into a state of apathy and neglect. All of these tendencies are combated by the general discipline of the hospital; he finds that he has to get out of bed, that he must have a bath, and must get dressed because it is the rule and because all the others do the same. In short, he is subjected to a kindly but firm and systematic direction and control. When recovery takes place, it is well that his relatives should not have exercised that control themselves, because it would have left behind it in the patient's mind a sense of humiliation and lasting resentment which is not felt when the control is impersonal.

Medical Treatment.

The treatment of acute mental disease tends as time goes on to approximate more and more closely to the treatment of acute bodily disease, and this is as it should be, for what else are the majority of the patients suffering from except acute bodily illnesses which include mental changes amongst their manifestations.

Where no specific treatment is known, our efforts in the beginning are concentrated mainly on securing for the patient rest in bed (if possible, in the open air), food and sleep, and in guarding him against attempts at suicide or possible outbreaks of violence.

In combating restlessness and excitement we prefer to rely upon the effects of hydrotherapy, particularly in the form of prolonged hot baths, rather than on sedative drugs. We would use hydrotherapy far more than we do if the necessary equipment and staff were available. Because a patient happens to be mentally ill, we do not cast our knowledge of general medicine to the winds, but we treat any concurrent or associated bodily illness, whether surgical or medical, along the same lines as it would be treated at a general hospital.

When a patient is first admitted he is subjected to a thorough physical examination, in the course of which we naturally seek to exclude the existence of those bodily diseases which stand most often in a causal relation with mental disorder, diseases such as syphilis, cardio-vascular degeneration, acute and chronic nephritis, *diabetes mellitus*, pernicious anæmia, multiple neuritis, brain tumours and so on.

If we think that focal sepsis is a factor in the causation of the patient's illness, we do not hesitate to call in the dentist or a nose and throat specialist to aid us in the investigation and treatment of the case. Where the essential cause of a mental disease is known to be an infection, as is the case with general paralysis of the insane, which is invariably due to syphilis, we adopt methods of treatment directed against the microorganism concerned.

The malarial treatment of general paralysis of the insane is one of the specialties of Mont Park. In this treatment the patient is inoculated with malarial parasites and allowed to develop a carefully controlled attack of malarial fever, which produces a rise of temperature and changes in the blood and tissues of the patient which are collectively unfavourable to the growth of the germs of syphilis, which are killed off. The malarial parasites themselves are then readily destroyed by the administration of quinine.

The malarial treatment of general paralysis was originated by Wagner-Jauregg in Vienna in 1917, and since then has been adopted all over the world. The credit of introducing it to Victoria is due to Dr. R. S. Ellery. It is one of the romances of medicine that a disease which formerly ran an inexorable course leading to death in from two to three years, is now treated in its early stages with every expectation of cure.

The resources of a pathological laboratory with trained assistants are always available and are constantly made use of by the assistant physicians both in diagnosis and treatment.

There is a department where ultra-violet light treatment is administered by Dr. Rogers to all patients for whom it may be thought beneficial.

We cannot be said to suffer at Mont Park from any inferiority complex, although it is a wonder we do not because we receive plenty of adverse criticism. Often I have been told by a mother dissatisfied with her son's progress that she would take him to see a proper doctor rather than a mad doctor, meaning thereby a doctor occupied exclusively with the care of mad people. Personally I should like the use of the term "mad doctor" to be altogether given up because of its ambiguity. One of my colleagues, who is a very good physician, was a little upset some time ago by a visiting doctor who suggested to him the use of thyreoid extract for a certain patient, as if he were letting him into the secret of some new and valuable form of therapy. Now thyreoid extract first came into use about forty years ago, and it does not take as long as that for

the news of some great therapeutic advance to filter through to us. As a matter of fact, we keep a constant watch on the medical journals of the world for any fresh developments or new discoveries that might find some application in the treatment of our patients.

Occupation Therapy.

Work is as necessary to men and women as food and drink, and in the treatment of the insane, after the acute phase of their illnesses is over, nothing is so important, nothing is so conducive to recovery as suitable occupation. Useful work improves their bodily health and enables them to sleep better; it distracts their minds from delusions and morbid preoccupations and tends to bring them back into contact with reality; it makes them feel that they are wanted, raises their self-esteem and diminishes that devastating feeling of inferiority which consciously or subconsciously is experienced by all of them.

In the words of Goethe: "The means of curing insanity are the same as those by which sane men are prevented from becoming insane." Work is one of them. We can become normal only by behaving normally. The varied activities incidental to the life of a great mental hospital provide naturally a wide range of occupations for its inmates. For the women there is the work of the wards, the kitchens, the sewing-rooms and the laundry. For the men there are the workshops under the direction of the carpenter, the painter, the upholsterer, the tailor and the bootmaker respectively, and the engineer's department, to which the plumber and the bricklayer are attached. Personally, I think that, other things being equal, work in the open air in some agricultural or horticultural pursuit is the best of all occupations for the insane, and at Mont Park the opportunities for such work are without limit. Labour is required for the development and maintenance of the grounds, the planting of trees, and for the work of the orchard, the vegetable garden, the nursery and the farm. Apart from all these avenues of employment, a limited number of patients, if they wish to do so, can find occupation in the private houses of the resident staff. These posts carry with them certain advantages in the way of change from the atmosphere of the wards and some form of remuneration, whether it be food or money, or both.

Many patients, just as in the outside world, seem to find or create for themselves some special niche wherein they are employed with satisfaction to themselves and benefit to the institution, and these special jobs are so varied as to defy classification.

With such a wealth of opportunity for work it seems incredible that great numbers of patients should be habitually idle, but such is the case; the airing courts are full of able-bodied chronic patients who do not do a hand's turn of work from one year's end to the other, but lie about or sit about unoccupied all day. This state of affairs is a reproach to us, but the only way to remedy it is to increase the number of the staff and carefully to select nurses and attendants with the right personal qualities for dealing with these patients. Some mental hospitals have a special occupation therapy department, where all sorts of crafts are taught under the direction of a trained occupation therapist who works in the closest cooperation with the medical staff; it is his or her business to select the most unpromising patients, the most destructive and degraded, the apparently unemployable, and to try to get them to do something, and it is often astonishing what good results can be obtained. Short of such a special department, I often wish that more could be done at Mont Park to widen the range of occupations available to women, especially in the direction of open air work, such as gardening.

Recreative Treatment.

In the way of recreation a good deal is provided for the patients at Mont Park, but in my opinion if funds and outside help were available far more could be done. In the summer, cricket matches are held on the sports ground, and in the winter time football matches are played and a certain number of patients are included in the teams; but there is no one to act as a sportsmaster to encourage and persuade the timid, the diffident, the apathetic to rouse themselves and take an active part in the games as a therapeutic measure. Golf links and tennis courts are available for those parole patients who may care to make use of them.

On Sundays groups of patients are taken for walks in the grounds, and these walks are undoubtedly enjoyed.

During Show time and Melbourne Cup week, parties of patients are taken by car to both of these festivals, and they appreciate the outings very much. A picnic in which a large proportion of all the patients takes parts, is held annually on the sports ground and is perhaps the social event of the year. There are foot races and sports of all kinds, side shows, merry-go-rounds, music and open air dancing, making in its totality a function altogether memorable.

In the fine new recreation hall dances are held for the patients every fortnight, and concerts and moving picture shows are given at irregular intervals. The public service band too plays in the grounds from time to time and is listened to with pleasure.

Of all forms of entertainment, the cinema is by far the best and most appreciated, and it is a great pity that funds are not available for the installation of first-class apparatus and the regular supply of good films. Wireless receivers, one hopes, will soon be available for all the wards, for nothing could be better than wireless for keeping the patients in touch with the outside world.

There is a library which could certainly be improved, but I am afraid no matter how good it was, only a small proportion of the patients would make use of it. The supply of newspapers and magazines, always inadequate, has recently been stopped altogether from reasons of economy.

Taking it all round, if a Mont Park auxiliary were to be formed on the same lines as the Austin Hospital Auxiliary, the members would have much scope for their activities.

Mental Treatment.

I mention mental treatment last, not because I think it least important, but because every form of treatment has its mental aspect. The removal of the patient from the circumstances and surroundings in which his illness arose is in itself a very important form of mental treatment, and is an essential preliminary to treatment of any kind.

The patient is spared countless irritating contacts with his relatives who, where their feelings and sympathies are so closely involved, cannot be expected to show the calm judgement, the patience and the firmness that are required. They are apt to anger the patient by their opposition to his wishes, especially if they attempt to restrain him by force; on the other hand, they can prejudice his chance of recovery by a weak indulgence of all his whims and follies.

The optimism of the nurses and attendants, the sight of other patients who are recovering, are among the most effective forms of suggestion. But I am thinking at the moment more of psychotherapy in the strict sense of the word. The majority of our patients are so ill or so demented that only the simplest forms of psychotherapy can be attempted, but even with them much can be done by suggestion and encouragement. We are hampered by the large number of patients who are allotted to each medical officer, but we recognize that there is no one influence or combination of influences so beneficial to a patient as individual attention to his special difficulties and requirements. It would probably surprise you if you knew how much the assistant medical officers are able to accomplish in this direction by concentrating their attention on the recent recoverable cases.

At Mont Park we are not wedded to any particular school of psychotherapy, but we endeavour to make use of the best ideas in all of them. We listen to the patients' troubles and try to point out to them their past mistakes; we try to help them to understand themselves and to make fresh adjustments to the demands of life. We try to give them courage to bear their present sufferings and to give them hope for the future. We do not scruple to employ suggestion in any form in which it seems likely to be of value.

At Mont Park we do not make use of psychoanalysis in the Freudian sense of the term, but all of us know about it and the new psychology, and we pay tribute to the greatly increased understanding they have given us of the meaning of symptoms and of the working of the human mind.

To acknowledge that Freud has made contributions of enormous value to psychology is one thing, to approve of psychoanalysis as conducted by Freud's disciples as a method of treatment for the mentally ill is quite another. We are by no means convinced of the truth of all its doctrines, and we believe that the dangers of its practical application are too little appreciated by the general public. We think that there are very few patients at Mont Park for whom psychoanalysis would be a desirable or even a possible form of treatment. We believe that very few people are competent by reason of their ability, personal qualities and specialized training to practise it and we are strongly of the opinion that no one is justified in taking up psychoanalysis as a side line. I personally have no hesitation in saying that the treatment is exceedingly detrimental to patients in the early stages of *dementia præcox*, that it invariably makes psychasthenics worse, and that it increases the depression of melancholics tenfold. From a consideration of the published cases, it would seem that it has a field of usefulness in the treatment of patients suffering from anxiety hysteria, that is, patients who suffer from morbid fears as distinct from obsessions. In general, I would say that psychoanalysis should be reserved for the treatment of the mentally fit, those of strong will and sound judgement. Religious consolation is available for all patients who may desire it. Ministers of all denominations regularly visit the patients and hold divine service in the new hall.

SOME OBSERVATIONS ON AUSTRALIAN HUMAN TREMATODE ENDEMIOLOGY BASED ON LOCAL SHEEP FLUKE INVESTIGATIONS.

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IT has occurred to me that, in view of the yearly lessening effective separation of Australia from other parts, and especially tropical and subtropical parts of the world, a proper understanding of the conditions locally favourable or inimical to the establishment and spread of such diseases as schistosomiasis, paragonimiasis *et cetera* is increasingly becoming a matter of some urgency.

The added opportunities for the introduction of these diseases (and their related intermediary hosts) with the undoubted early coming of regular air mail services will present for solution several difficult public health problems, and the longer the delay in facing the possibilities or probabilities concerned, the more difficult will those problems become.

The present communication has been founded mainly on my personal investigations[1] into the spread of the sheep fluke and allied trematodes already established in this State, but is intended in this instance to draw attention to the importance of certain principles illuminated by the sheep disease and related generally to the perhaps more vital human problem.

The General Problem.

Once we assume, and I take it that we may quite rightly assume, the eventual introduction of persons harbouring fertile adults of more than one class of

human fluke, this problem becomes largely a matter of the presence in this country (whether because already present or becoming imported) of suitable intermediate hosts in satisfactory population density and permanence.

The most important intermediate host is some form of water snail, and first and foremost we should have a much fuller understanding, not merely of our own local snails and of the possibilities of the adaptation of one or more of these to the needs of one or other trematode life cycle, but in addition we should consider the probability of the introduction of other snails and their acclimatization possibilities.

Actual experience has demonstrated that the mere knowledge of snails as such, even if this is a thorough biological one, is insufficient, but that in the solution of the prevention or eradication of such parasitic infestations there is needed a broader viewpoint embracing matters climatic, physiographic, geological, social and economic.

A Trematode Cycle.

To illustrate, one might here profitably outline the cycle of an average trematode life and briefly point out the main departures from the specified cycle in other cases.

Fasciola hepatica will serve for the type illustration.

Its adult stages may be found in several animals, but its effect in sheep is of the greatest economic importance, and this may be called the principal host. The most important subsidiary reservoir is probably the rabbit. Cattle and man are also naturally liable to infection.

The adult fluke inhabits the liver passages, and from there its innumerable eggs find their way to the outside world. In the sheep the droppings may or may not reach water. If they do not, the egg dies and the cycle is broken. In water the egg develops a ciliated young which emerges after about a fortnight, and then this little creature has a "frantic eight-hour search" for the right type of snail. If it fails to encounter such snail, the cycle is again broken. If it does, it develops in that particular species of snail and produces three special stages, sporocyst, redia and cercaria. The last are small tadpole-like creatures which emerge from the snail and for a while swim freely in water. Later, probably in the early morning, they swarm up neighbouring foliage, grass *et cetera* and become encysted. They are, or may be, in due course part of the food of some herbivore. The cysts pass through the stomach unscathed, but in the bowel probably by the combined action of first the hydrochloric acid and later the alkali and the bile[2] [3] [4] the cyst wall becomes dissolved and the cercaria emerges again, but *minus* its tail. It probably does not migrate to the liver by the bile duct, but by piercing the mucosa of the bowel and entering blood vessels.

So much for *Fasciola hepatica*.

The human pest, bilharzia, and probably other schistosomes cut out some of the above cycle. They do not develop redia and the final cercaria stage in the snail does not become encysted, but enters the skin or mucosa of the host, and again by the blood reaches its final habitat in urinary or rectal veins.

Some at any rate of the Asiatic human flukes take in an extra stage after the cercariæ are freed. These form their cysts in a secondary intermediate host, fish or crustacean.

In certain bird flukes a curious modification of this process occurs. Here the primary and secondary intermediate hosts may be the same snail or members of the same species.

The above modifications of life cycle are obviously related to the particular habits of the final host and indicate how accurately a number of factors must be adjusted to fulfil the conditions requisite for the permanent establishment of any particular fluke disease which means in other words the annual production of approximately equal numbers of fertile adult worms.

It will be seen that the very complexity of the parasitic life history of trematodes multiplies the "danger periods" for the larval stages and it is also evident that circumstances, superficially entirely favourable to fluke spread, might interfere with and jeopardize, if not entirely prevent, the possibility of its occurrence.

By the detailed study of the minimum requirements needed to make the complete cycle possible, and by the full understanding of the weakest links in each particular case, we munition ourselves in the fight against such animal and human disasters.

It is not my purpose here to consider in detail any one or other fluke disease, but rather to draw your attention to those general aspects of factors influencing the passage of the fluke life from one animal to another. Emphatically would I stress the fact that certain circumstances, *a priori* seemingly unconnected, may turn out to be most important in favouring or hindering the spread of trematodes, and due attention thereto may be the keynote of preventive measures.

To recapitulate, the successful prevention or eradication of trematode disease must be studied as a "local" problem, in which facts of the life history of the particular trematode, its intermediate and final hosts and possible reservoir hosts and intermediate host enemies are closely correlated with the special circumstances of the particular class of country, its climate, its water supplies and not least its peculiar socio-economic development.

Factors of Trematode Endemiology.

We can conveniently discuss the main and most important factors of trematode endemiology under three principal headings: biological, physiographical and socio-economic.

Under biology the investigations embrace such matters as the study of the parasite itself, its differentiation from other related trematodes, its detailed life cycle, the intermediate host or hosts, and especially their reproductive habits in relation to climatic conditions and to natural or artificial checks thereon. It also includes considerations as to the life habits of the habitual principal hosts and of any animals that may naturally feed on any of the intermediate hosts.

Physiographical considerations involve the study of available water supplies and their permanence,

rainfall, temperature, humidity and the geological and geographical peculiarities of the district.

Socio-economic factors chiefly concern the industries and relaxations of the community and their habits in regard to drinking, feeding and bathing. The population density especially in relation to danger zones also is a matter of importance under this heading.

It will be seen that indeed the above divisions overlap, as they needs must, but they are none the less useful expedients in focusing attention on one or other aspect of the subject.

Physiographical Factors.

For convenience we shall commence the more detailed discussion by reviewing those matters loosely grouped as physiographical.

It need not be stressed that a parasitic chain involving a water habitat for certain of its stages postulates adequate and at least partially permanent water. It is not so readily recognized that the right type of water is required, that not all water is suitable for any snail development and, what is more important even, that the suitability of the water varies in relation to the different species of snail.

Speaking on the general suitability of water in relation to snail life generally, one considers principally three aspects, its reasonably permanent nature, its freedom from deleterious chemical substances and its relation to adequate snail food supply, aeration and excreta removal. That these conditions may not always be present is one observation early made by an investigator, though at the present time the particular inimical factor or factors may not be apparent.

Particular individual conditions of available water supplies may be also noticed and are, as would be expected, closely correlated with the anatomy, physiology and habits generally of the particular snail and with the necessities of its particular cycle.

Many of the above general and specific snail-water relationships can be conveniently illustrated by the study of two indigenous water snails, *Limnæa brazieri* and *Bulinus brazieri*, both of which have a considerable distribution in parts of New South Wales.

Both snails need those minimum general requirements of reasonable permanency of water collections, freedom from injurious substances derived from the mineral or plant world, and suitable and sufficient food supply. They both require that the water be rightly oxygenated and that the excreted substances are in one way or another removed or destroyed with sufficient rapidity. Now a very short consideration of the facts shows that these requirements are closely related to such matters as annual rainfall and its seasonal distribution, the geological contours and mineral constitution and the resultant flora developing in the locality.

Both snails will be prevented from successful establishment in districts that do not provide reasonably permanent water collections, as even though, as will be shown later, survival is quite possible in certain types through prolonged drought spells, one must nevertheless grant adequate opportunity for uninterruption of the egg-laying periods and the eggs' subsequent development. Both snails will not become established in water containing harmful chemical substances or in which there is inadequate food and air supply *et cetera*.

But a more interesting, and for our purpose more useful, aspect of the physiographical factors is found in their relation to the individual peculiarities of each of these snails.

Limnæa brazieri is (*inter alia*), as I first showed, the usual if not the only local intermediate host for the larval stages of *Fasciola hepatica*. *Bulinus brazieri* is (*inter alia*) the host of three larval flukes described by me: *Cercaria catellæ*, which is the early stage of a bird echinostome; *Cercariæ greeri*, a schistosome; and *Cercaria pellucida*, a stylet cercaria which may find an adult stage in frogs.

Bulinus brazieri was for many years erroneously accepted in Australia as the sheep fluke transmitter, until I showed the extraordinary nature of Cobb's[5] composite drawing, indicating his confusion of the right-hand spiralled limnæa and the left-hand spiralled bulinus. *Bulinus brazieri* is certainly not the sheep fluke intermediary, but it is the vehicle for several known larval stages of other flukes and is particularly important, as it may possibly be an effective local agent for the transmission of one form of bilharziasis.

Limnæa brazieri is essentially a swamp or bog snail and prefers, nay insists on, the quiet currentless shallows of such locations. *Bulinus brazieri*, on the other hand, is a pond and creek inhabitant, a frequenter of deep or running water. The discovery of the biological restrictions of *Limnæa brazieri*, confining it practically to a special and not nearly so widespread a type of habitat as that favoured by *Bulinus brazieri* and many other water snails, has proved of inestimable value in the planning of preventive measures and has rendered unnecessary many attempts hitherto made to eradicate snails from creeks and ponds in which *Limnæa brazieri*, the cause of the trouble, does not dwell.

This knowledge also showed the danger of allowing naturally swift running and perhaps deep creeks to be converted into infested limnæa-swarming bogs by the growth of water weed carelessly imported into the district.

Geological conditions basically determine the frequency of either type of snail, for the very nature of the contour, subsoil, artesian or subartesian springs will bring about conditions favouring bog or swamp on the one hand or rapidly running creek or pond or lake on the other. Human interference with geological deposits has been shown to have important bearings on limnæa development and doubtless also possibly less effectively interferes with the life history of other snails.

In certain parts of the world the opening up of copper-workings has been known to cleanse a district completely of fluke in sheep, due doubtless to small traces of copper entering the swampy homes of these animals. In this State I know of one station whose owner prides himself on the management that has kept fluke and black disease off his runs, although neighbouring owners are heavily infected; it is almost certain here, however, that the presence of superficial copper ore is the real preventive.

Both in New England and in Monaro and near Goulburn I have been struck with bogs or swamps apparently typically suitable for the maintenance of *Limnæa brazieri* but which contained none of these creatures. Sometimes small bogs quite close together are found, some free from snails, some swarming with them. It is at any rate one possible explanation that there are local chemical differences behind this anomaly.

In this connexion the matter of acidity and alkalinity has been at times loosely discussed by workers, but very little work of any value whatsoever has been done from this aspect. This may be probably attributed to the fact that reliable hydrogen ion concentration estimation is not always within the range of knowledge of the particular observer and moreover is in general field work not always practicable. Mere statements that the water was acid or alkaline without even mention of the criteria on which such broad statements are founded are, of course, quite useless, though they have been made. In any case the information of hydrogen ion concentration needs to be associated with details of other chemical and physical characteristics of the water, and particularly with its organic content, the presence of buffer material *et cetera*. Sufficient has been said, however, in relation to the physiographical effects on the production of suitable water supply for these two species of snail. Examples of the results can be found in many parts of this State.

Conditions eminently favourable to *Limnæa brazieri* are found in the "black springs" of Monaro and similar springs in New England and other parts. These places, with their practically permanent shallow water, their absence from brusque currents, their soft non-gritty muddy bottoms may indeed be regarded as the typical haunts of this particular snail, but are simulated to an extent permitting establishment and continued propagation of the snail in certain shallow weedy pools or weed-blocked watercourses.

It is as well to state here that *Limnæa brazieri* is found under certain conditions in deep water holes or in running creeks or streams, and notably on the banks of certain large rivers. Here, however, I believe its presence is in a sense accidental and due to its having been by heavy rain washed out of its usual homes at the head of the catchment area of the stream or river concerned. In Goulburn, for instance, after any sort of "fresh" *Limnæa brazieri* can be found plentifully on the sides of the Wollondilly, where the water has overflowed, but repeated investigation at other times does not suggest any permanence in their life at this place, save only in a few shallow pools that are at all times covered with a thin film of water and are permanently weedy. Here, indeed, they seem well established and breeding.

Biological Factors.

Biological factors concern the lives not only of the fluke, the snail and the adult-carrying host, but need an understanding of those subsidiary hosts which, by functioning as reservoirs for sexually mature adult trematodes, play so important a part in maintaining the disease in what we for various reasons regard as the principal host, be this man or some economically important domestic animal. The biologist should also be acquainted with the life history of birds and other animals which may feed on one or other intermediary host. He should consider, also, the possibility of the effect on the snails of disease and other detrimental circumstances.

The comparative anatomy and physiology of various snails are important in this connexion and not only do many restrictions of a particular snail's life conditions find explanation therein, but the clear appreciation of these peculiarities is most helpful in any scientifically designed preventive campaign. For instance, utilizing the two snails above as illustrations, the very structure of the walking organ or foot of *Limnæa brazieri* probably largely determines its partiality for soft bottomed bogs. Walton[6] originally pointed this out in connexion with *Limnæa truncatula* in England.

It appears that *Limnæa brazieri* (and related snails elsewhere) have a foot that is anatomically unsuited to gritty surfaces, and therefore that grit alone in an otherwise suitable place may be the cause of the absence of *Limnæa brazieri*. I have seen springs that were free from *Limnæa brazieri* and appeared to differ from others in which they lived, principally because of this gritty bottom. Correlated with the foot structure there is a great difference in robustness of shell and general build between *Limnæa brazieri* and *Bulinus brazieri* which of itself may largely account for the preference of the less hardy snail for the quiet bogs and of the other for running or deep water.

A curious experiment seems to throw light on the selection of habitat by these snails. If one places a number of limnææ in a clean jar with six or eight inches depth of water and stands the jar overnight, next morning almost invariably the limnææ have deserted the water altogether.

Though I am not convinced that mere pressure is the whole cause of the phenomenon, the field findings and the greater difficulty in establishing permanent limnææ-filled aquaria, except in relatively shallow water, support the contention that for one or other reason *Limnæa brazieri* does not find deep water of this nature a suitable habitat.

It is more than likely here again that this deep water avoidance is related to anatomical and physiological differences as yet incompletely understood. One variety of limnæa does indeed inhabit deep pools and running creeks. This snail, *Limnæa lessoni*, is found fairly commonly in New England, and my experience indicates that its favourite site is attached to water weed or water lily leaves quite close to the surface. If detached, it usually floats and does not, as does bulinus, sink to the bottom when disturbed. Maybe in this case also we have indications pointing to pressure avoidance. The whole matter, however, needs much greater study, and this may give practical rewards. In certain classes of country there have become formed morasses in the bed of ravines. Sometimes these are in all respects suitable for, and thus populated by, enormous numbers of *Limnæa brazieri*. In many such cases the bogs are too large for satisfactory copper sulphate treatment

and perhaps the stream that emerges may be emptying into streams that are fish-filled. The use of bluestone has been shown in the United States to be highly detrimental to the young of certain food fishes. I have suggested, though so far I do not know of any instances where it has been practically tried, that it would probably bring about a complete extermination of *Limnæa brazieri* in such marshes if the ravine concerned were merely damned so as to put a foot of water over the morass. This could at times be quite cheaply done.

Survival tactics, as we may call them, are other biological aspects of the question and the relative ability to survive untoward conditions, say due to the drying up of water collections, is immensely important in the matter of both human and animal trematodiasis.

The presence of an operculum in certain molluscs is an obvious help to tiding the creature over dry spells, and it is well known that some operculate snails will remain alive for months or years behind their closed opercula in complete absence of water.

Bulinus brazieri is a non-operculate Australian snail that has high survival possibilities, especially when, as it frequently does, it inhabits artificial or natural ponds or small lakes that from time to time dry up completely. Near Cooma there are many of such ponds, and I have dug up from a foot or more below the absolutely dry cracked and hard surface of the once pond area numerous specimens which on immersion in water soon resumed their ordinary life. Here the nature of the bottom of the pond and the formation of psuedo-opercula by the drying mud encase the snail from absolute desiccation and cause it to survive long periods of drought. I have not so far been able to demonstrate such survival methods in the case of *Limnæa brazieri* and from anatomical and other considerations one may doubt whether it occurs in such a way. The extremely fragile nature of this latter snail and of *Limnæa lessoni* must be an impediment to the methods of *Bulinus brazieri*. In my early field work I found that the mere shaking in water entailed by collection in bottles was often sufficient to detach most of the snails from their shells, whereas bulinus snails were unaffected by similar conditions. Again, I have found shells empty of contents on small dried-up swampy patches, but not so far any buried but still living specimens.

These apparent difficulties in survival may be associated with the usual absence of *Limnæa brazieri* from bogs that frequently become dry, with its absence otherwise unexplained from situations suitable apparently, but which may have been dry at times, and its characteristic presence in permanent or nearly permanent water collections. It would explain particularly the absence or infrequent occurrence of *Limnæa brazieri* in some of the ponds round Cooma which frequently contain shallow and weedy parts that would appear quite similar to locations infested elsewhere with this snail.

Still the conditions of spread of *Limnæa brazieri* and its occurrence occasionally in places that had obviously once been dry would seem to postulate some, even if less effective method, of surviving drought.

Another biological matter of much interest concerns their reproductive mechanism, especially in relation to season rainfall and water and food conditions, and here again one can usefully take our previous examples as bearing on the general question.

Limnæa brazieri deposits an egg mass that is obviously less robust in its construction than that of bulinus snails generally, and *Bulinus brazieri* in particular. Its mode of attachment to surrounding vegetation is also much less secure. Evolution has provided an egg mass for each snail appropriate to its particular need. The more fragile and loosely attached egg mass of *Limnæa brazieri* is quite effective under the conditions of freedom from disturbance currents *et cetera* which characterize its abodes, whereas that of bulinus is quite consistent with its more varied environment and the possibilities of current and other water movement in the more turbulent surroundings of pool, river or creek. The habit of bulinus in laying its egg masses on the shells of fellow snails is again related to its special life circumstances.

The actual times and frequencies of egg laying, their maturing periods in relation specially to heat or cold, and the individual snail's life tenure and its reproductive maturing are all matter of moment about which very little seems to be accurately known. Detailed study of selected places in the field is much preferable to laboratory aquaria tests, which entail quite a number of fallacies.

The correlation of various steps in the life cycles of sundry flukes and the habits of their intermediate hosts and also their surroundings and the habits of the final host are very important and extremely puzzling.

The steps in evolution that have enabled this precise coordination between the lives of several animals and the equal coordination between these habits and special physiographical conditions are, however, difficult to explain, though none the less true and vitally interlinked with our efforts to combat one or other of these diseases.

Take the sheep fluke again and its transmitter, *Limnæa brazieri*, and consider the last stage only in the life cycle, that stage whereby the cercaria becomes transferred from water to its final host. The very nature of the "black spring" or similar location is seen to be eminently such as might have been specially designed for the purpose.

The snail seems to have been conditioned for this life, not merely to conserve its own permanence, but to facilitate the peculiar nature of its parasite's requirements. In most creeks and in many pools the transference to the sheep could hardly come about, for not merely would these pools often be difficult of access to the sheep, but even if the cercariæ were sufficiently numerous in the water to be drunk in quantities by this animal, they would usually be at once destroyed by the hydrochloric acid in the stomach. The cercaria would in most of these situations be unable to effect a "happy landing" and have access to suitable herbage on which to encyst.

In the bog, however, all conditions are ideal. The cercariæ have easy access to surrounding herbage

on which they become encysted. The sheep also has no difficulty in meeting its enemy on common ground. It is attracted, indeed, often to the bogs because around them is often the only attractive fodder in a dried up paddock.

As a contrast, consider *Bulinus brazieri* in relation to the spread of the bird echinostomes above mentioned, *Cercaria catellæ*. Here the snail's presence between the pebbles of a running creek or in ponds frequented by wading birds again brings parasite and host together. Here the encystment of the cercariæ occurs in members of the same species of snail in which other larval stages occur.

Contrary to what one might imagine, it seems that the cercaria definitely leaves the snail and has some time of water life, but returns to other snails, where it becomes encysted. It seems to me this step is one providing for a wider spread of infestation than would occur if the cercariæ merely became encysted in the snail wherein it had passed its sporocyst and redial stages. This is confirmed by the field tests, which showed a very much greater number of cyst-bearing snails than those having earlier stages.

It should be noted that what are to me quite indistinguishable cercariæ and cysts (the latter always few) have been found in *Limnæa brazieri* and, if indeed they are identical, this will probably be associated with the habits of the bird hosts, but it does not invalidate the general suggestion of an interlinked mechanism of a kind distinct from that in the case of fasciola by which the opportunities are multiplied and facilitated for entry into the stomach of water-frequenting birds.

Next, under heading biological, comes the question of reservoirs of the adult sexually mature fluke other than the so-called principal host. In this State undoubtedly the rabbit is the principal reservoir for sheep fluke, and failure to realize this fact has rendered futile many procedures adopted by the pastoralist. For instance, it is manifestly useless to fence off bogs unless they are wire netted also, for the rabbit keeps the bog infected, and the bog the rabbit. Eggs from the flukes in rabbits are dropped in places unfenced and also usually the infected bog spreads beyond its confining fences, carrying with it its fluke-infested snails and the sheep outside thus become infected also.

The spreading of snails is another subject, further information about which would be of material assistance. That, for instance, *Limnæa brazieri* does spread and has made once healthy country poisonous to stock is self evident, but how the spread occurs in all cases is less clear. Water carriage does not seem to elucidate the infection of an isolated bog high up a hill side. Perhaps egg masses or young snails may adhere to the legs of animals and so be transferred, but more facts are needed to understand the matter.

The means of spread of snails generally deserves special consideration in relation to the probable importations suggested.

Socio-Economic Considerations.

Socio-economic considerations involve the whole question as to what man is doing in a district and what is his population density and the population density of carriers of any fluke disease therein.

There is no doubt that man's interference has contributed greatly to the spread of sheep fluke. The introduction of such weeds as cress and water hyacinth has converted healthy creeks into quagmires in which are innumerable disease-spreading snails. The overstocking of paddocks and the failure to realize that the sheep's habits are worthy of consideration have brought about in this animal a human-made drive towards the enticements of those green bogs which contain so much hidden menace. Slipshod methods of watering sheep have greatly contributed. Fluke in sheep is, in fact, one of the best arguments in favour of erecting timely barriers against those human infections with which we medical men are more specially concerned. It is an object lesson, also, of what not to do, and demonstrates clearly how indifference and ignorance have caused the introduction of a foreign pest and have spread it far and wide. The method of fluke eradication successfully employed by the few that followed in a strict manner advice given by me shows how comparatively easy it would have been in earlier days to prevent the onset of the endemic disease. The fact that there is still fluke in sheep and cattle in many areas is also a commentary on the want of progressiveness of many of our land owners.

It is more than a broad hint to the public health expert, that the adaptations that have occurred in the apparently imported fasciola enabling its great spread throughout Australia may be later paralleled with human disease on a similar scale.

Under this heading investigations need to be made into other social and economic circumstances favouring trematode spread. It is clear that in certain cases bathing in infected water plays a part in infection of man, and also the feeding on raw or half cooked vegetables or fish or crustacea enables the completion of the parasite life cycle in other cases.

Certain industrial operations, whereby water collections are made, altered, or when certain crops are grown, may conceivably facilitate the introduction of some human trematode diseases.

Even an apparently harmless hobby may not be unfraught with danger, and the importation of foreign water weeds, bulbs, goldfish *et cetera* is a case in point.

Let us finally consider a few tropical or semi-tropical disorders that may conceivably become shortly implanted here.

The two forms of bilharzia are spread by two types of snails, species of which abound in New South Wales. Moreover, there is evidence to show that at least one of these snails, *Bulinus brazieri*, does transmit a schistosome, though we have no information as to this cercaria's final host.

Cercaria greeri, described by me, is, however, definitely of the same class as the trematode concerned in both types of bilharzia and in the Japanese human *Katsurada* disease. This and the fact that, besides numerous bulinus species, any one of which for all we know may be effective in bilharzia of the urinary type, there are also several planorbinid snails, the common means of spread of rectal bilharzia.

The Japanese schistosome seems usually to be spread by "blanfordia" snails, of which fortunately, Mr. Iredale tells me, we have no near Australian allies. We cannot without definite experimental proof, however, disregard the possibility that one or other Australian snail may not become adapted to the life history if once the schistosome is introduced.

The same may be said indeed of paragonimus, metagonimus and clonorchis infections. We have not apparently got the melœnia snail here, but we do not know whether or not some other might not fit the parasitic lock.

Moreover, as suggested above, there seems at the moment rather greater immediate risk of introducing the intermediate hosts than the adult worm, and in the case where fishes or crustacea figure as secondary intermediaries some at any rate closely related, if not identical, forms of fish at least abound.

Summary.

1. My field and laboratory work in investigating sheep fluke has, *inter alia*, disclosed circumstances suggesting the urgent need of a thorough investigation of the possibilities of importation and spread of certain trematode human infestations in this country.

2. They suggest, also, that team work is desirable as the facts concerning such disease spread involve a wide range of knowledge, especially of biology, geology, chemistry and local socio-economic conditions.

3. It seems desirable that careful attention be given by health authorities to the possibilities of preventing the danger of importation of carriers of the adult flukes concerned and their respective intermediate hosts.

4. In the case of arrivals by air it is suggested that particular danger lies in the rapid movements of infected persons thereby provided. Here it would seem that microscopic tests should be made on arrival or shortly after.

5. In steamer transport modifications might be made which, while still insisting on microscopic evidence of freedom from infection, might bring this about by the acceptance of proper certificates from recognized laboratories in the country of embarkation.

Acknowledgements.

I desire to acknowledge much help in snail determination from Mr. Iredale, of the Australian Museum, from my friend and assistant Mr. Greer, in field and laboratory work, and overseas from Dr. Cawston, of Durban, who has freely given me advance information about his own work and forwarded me much interesting material and drawings and photographs.[1]

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(2) T. Yokagawa: "Biological Study of P. Westermanii", *Tokio Medical News*, Number 2061, 1918, page 311.
(3) T. Yokagawa: "Studies on P. Westermanii", *Tropical Diseases Bulletin* (Abstract), Volume XVI, 1922, page 126.
(4) T. Yokagawa: *Loco citato*.
(5) N. A. Cobb: The Sheep Fluke, *New South Wales Agricultural Gazette*, Volume VIII, 1897, page 453.
(6) C. H. Walton: "Liver Rot in Sheep and Bionomics of L. Trancatula", *Parasitology*, Volume X, 1918, page 232.

[1] I have tried repeatedly to obtain living bilharzia ova to make the practical test with various bulinus and planorbinid snails, but though specimens came twice from Dr. Cawston the eggs were apparently dead, for no germination occurred in water. If any reader can fill this gap I should be much obliged.

FACIAL PARALYSIS DUE TO TOXIC INFLAMMATION OF THE GENICULATE GANGLION.[1]

By J. PARKES FINDLAY, M.B., Ch.M.,
Assistant Aural Surgeon, Sydney Hospital.

My object in taking as my title for this discussion "Facial Paralysis due to Toxic Inflammation of the Geniculate Ganglion" was to present this rare type of infection causing complete facial paralysis with other signs and symptoms. This inflammation is the result of a focus of infection in the mouth and pharynx. It is rare to see this geniculitis; the manifestations have been classified by Ramsay Hunt and are known as the Ramsay Hunt's syndrome. I have seen only five cases in the out-patients' clinic in three years, so the percentage is extremely small.

I do not intend to discuss the general causes of facial paralysis, except just to mention the most common: (i) Exposure to cold followed by neuritis of the facial nerve; (ii) neuritis due to toxæmia, gout, diabetes, syphilis, leuchæmia, diphtheria and other specific and infective diseases; (iii) tumours of the facial nerve, (*a*) intracranial, (*b*) intraosseous, and (*c*) external neoplasms; (iv) middle ear suppuration with cholesteatoma, and curettage of the middle ear with exposure of facial nerve; (v) trauma due to operation, especially radical mastoid operation, one of the most frequent causes of facial paralysis; (vi) geniculitis.

Anatomy of the Geniculate Ganglion.

At this stage I think it advisable to mention briefly the anatomy of the geniculate ganglion and the distribution of the facial nerve as it concerns this particular type of infection.

The geniculate ganglion is the sensory ganglion of the facial nerve. This ganglion receives all the sensory fibres of the facial nerve and is situated in the Fallopian canal. Several nerves are associated with this ganglion: (1) The greater superficial petrosal nerve joins the sphenopalatine ganglion by way of the pterygoid canal, being accompanied by the deep petrosal nerve. This is a sensory nerve to the sphenopalatine ganglion, carrying sensory fibres from the mucous membrane of the palate, nasal fossæ and vasodilator fibres of the lachrymal gland. (2) The lesser superficial petrosal nerve joins the otic ganglion; this nerve is joined by a fine nerve from the geniculate ganglion, *ramus anastomotica cum plexu tympanica*. The otic ganglion communicates through the auriculo-temporal nerve, which is a branch of the third division of the fifth nerve, with the external auditory meatus.

[1] Read at a clinical meeting of Sydney Hospitalers' Club on October 18, 1932.

The facial nerve from the ganglion passes in the facial canal and it gives off a branch *nervus stapedius*, and a little later the *chorda tympani* outside the canal gives off the posterior auricular nerve, which supplies the occipitalis and posterior auricular muscles, next the digastric, stylohyoid muscles, and then divides into two large branches, temporo-facial, cervico-facial. These supply platysma, buccinator and orbicularis muscles and *musculus incisus*. It is important to know this distribution of the facial nerve when considering signs and symptoms of inflammation of the geniculate ganglion. The facial nerve is established now as being a mixed motor and sensory nerve, and supplying through the posterior auricular nerve, sensory fibres to the skin of the drum membrane, external canal and meatus of the auricle.

Symptoms.

The symptoms follow the infection of the geniculate ganglion very quickly and have been described as a syndrome.

1. Intense otalgia and tinnitus occur, followed later by swelling of the ear, which develops into *herpes zoster*.

2. The facial paralysis develops and in all the cases I have seen it has been a complete facial paralysis of the side involved, commencing at the same time as the *herpes zoster*.

3. Loss of taste occurs, but I have found this rather hard to establish, although two patients were definite and stated that they had no taste for any kind of foodstuffs.

The distribution of the *herpes zoster* is constant, the drum membrane, the walls of the external canal, external meatus, *cavum concha*, antitragus, antihelix and part of the lobule are involved.

If the inflammation of the ganglion extends along the nerves into the internal auditory canal, hypacusis follows with nystagmus, vertigo and vomiting; the eighth nerve being involved, deafness with tinnitus occurs, simulating a typical Ménière's syndrome.

The otalgia varies in the intensity and duration, sometimes lasting for seven to ten days, being accompanied by severe noises in the ear.

Reverting to the distribution of the *herpes zoster*, this is important, as it indicates a direct sensory supply from the facial nerve to the external auditory canal by way of the posterior auricular nerve, and not a tortuous route *viâ* the otic ganglion and the auriculo-temporal nerve. This supports the fact which I mentioned previously that the facial nerve is a mixed motor and sensory nerve.

Treatment.

Treatment is either medical (local and expectant) or surgical.

Medical Treatment.—The facial muscles should be supported. I find a piece of "Zincoplast" from the corner of the mouth to the upper part of the maxilla serves the purpose extremely well. The eye should be watched for any corneal abrasions, but I prefer the patients to close the eyelids on going to bed with a small piece of "Zincoplast"; this prevents any complication developing.

Massage of the facial muscle should be commenced at once. Some writers think this does more harm than good, but tonicity of the facial muscles must be conserved, and I think light massage combined with electrical stimulation is indicated. All my patients have received this treatment, and so far very satisfactory results have been obtained.

The tinnitus and vertigo, which sometimes are very upsetting to the patient, should be relieved by giving bromides.

Surgical Treatment.—I must impress the fact that immediately it has been determined that the inflammation of the ganglion has been caused by a toxic infection from a focal sepsis, this focal infection must be eradicated. This is very important, as it has a direct bearing on the facial palsy. If the focal sepsis is not located and removed at once, the delay results in a long-lasting paralysis; even the delay of a week is serious.

In several of these cases, due to delay, the facial paralysis persisted for more than a year, but the focal infection being at once removed, as in Case II, the paralysis cleared within fourteen days, the facial muscles resuming their normal function.

Case Histories.

I will now give a brief *résumé* of the histories of the five cases.

CASE I.—D.D., a female, aged thirty-one years, was seen on October 19, 1931. She complained that pain in the right ear, with severe noises and giddiness, had commenced nine days before she came to hospital. This was followed by drooping of the right side of the face and inability to close the right eye. This condition followed extraction of an abscessed tooth, the second bicuspid, fourteen days previously. She could not taste any food. The earache persisted with noises for ten days, and the right ear became swollen. There were no headache, no sore throat, and no nose trouble.

On examination the right ear drum membrane was normal. The external canal was slightly swollen. There was no diminution in hearing. The tonsils were normal, the nose was normal. Pus was exuding from the socket where the second bicuspid had been extracted. Tenderness was present over the first molar. The patient had a complete right-sided facial paralysis. X ray examination revealed septic absorption in the region of the upper right first molar.

The first molar tooth was extracted. Massage and electrical stimulation were applied to the facial muscles.

Facial paralysis persisted in this case for over twelve months. In my opinion this was due to the fact that the patient did not report to hospital when first noticing the paralysis.

CASE II.—D.B., a female patient, aged sixteen years, was seen on August 23, 1932. She gave a history of severe earache in the right ear four days previously, followed by dropping of the right side of the face; she could not close the right eye. This was associated with sore throat for some days. The right ear was slightly irritable and became swollen. The patient had an attack one year ago with the same symptoms, which apparently cleared up.

On examination the tonsils exuded pus, the right more than the left. The nose was clear; adenoids were present in the post-nasal space. There were no signs of herpes in the right ear. The drum membrane was slightly red,

the external canal was slightly swollen. A complete right-sided facial paralysis was present.

Tonsils and adenoids were removed on September 6, 1932. The patient was discharged from hospital on September 8, 1932. On September 22, 1932, the facial paralysis had practically disappeared. The function of the facial muscles was normal.

CASE III.—A male patient, aged twenty-six years, complained of sore throat on the left side, fairly severe, of three days' duration, with earache, which was very bad; he became deaf, with blisters in his ear. This was followed by inability to close his left eye and his mouth became crooked.

On examination acute tonsillitis and pharyngitis were present, mostly localized to the left side; the left tonsil exuded pus. Some crusts were present in the external canal and meatus of the left ear. A complete left-sided facial paralysis was present.

The tonsils and adenoids were removed and this was followed with facial massage and electrical stimulation. The facial muscles were supported with "Zincoplast".

The facial paralysis in this case lasted for two months before any signs of improvement appeared.

CASE IV.—An adult, aged thirty-three years, gave a history of influenza for a week, followed by a very sore throat, with earache and deafness of the left ear. This occurred one week before he came to hospital. The ear was very sore on the outside. Dropping of the left side of the face was present.

On examination the left ear and drum membrane were normal. Several old dried vesicles were seen on the posterior wall of the external canal. The left tonsil was enlarged and exuded pus. A complete left-sided facial paralysis was present.

The tonsils were removed. This patient was given facial massage and electrical stimulation to the facial muscles.

The facial muscles regained their normal function in six weeks.

CASE V.—An adult, aged thirty-six years, was seen on December 12, 1931, with a history of sore throat followed by intense pains in the right ear, with deafness and giddiness. The right ear became swollen and later broke out into little blisters, which were very irritating. He had difficulty in closing his right eye and could not speak clearly.

On examination the right ear showed *herpes zoster* of the external canal and *cavum concha*. The pharynx was very injected and the tonsils were very acutely inflamed. No pus was seen in the right tonsil on pressure. There was a complete right-sided facial paralysis.

This patient was advised to have his tonsils removed at once. He declined the operation, so he was ordered facial massage and electrical stimulation with large doses of bromide. This patient has not since reported to hospital.

Reports of Cases.

THREE CASES OF TUBERCULOSIS.

By GUY GRIFFITHS, M.D.,

Senior Honorary Physician, Royal North Shore Hospital of Sydney; Consulting Physician to the National Association for the Prevention and Cure of Tuberculosis.

Pulmonary Tuberculosis Diagnosed by Lumbar Puncture.

K.B., A FEMALE patient, aged nineteen years, was admitted into the Royal North Shore Hospital of Sydney under my care on March 6, 1932, complaining of weakness, wasting and weariness for several months, and of recent headache, stiffness of the neck and vomiting. Her past history was that in October, 1931, she was in the Royal Prince Alfred Hospital suffering from pleurisy after influenza. Although she had no cough and no sputum, she had dulness and feeble tubular breath sounds over most of the right side of the chest, but without râles or rhonchi, even after cough. Her temperature was 36·7° C. (98° F.), her pulse 100 per minute, and her respirations 24 per minute, and she had also chronic dyspepsia and anorexia. I suspected chronic tuberculosis with terminal meningitis, and applied to the Royal Prince Alfred Hospital for confirmation. I received a very courteous reply from the Medical Superintendent, to say that she had been under the care of Dr. E. W. Fairfax and that her chest had been aspirated four times, and four times artificial pneumothorax had been induced. Although X ray examination had not shown typical tubercular lesions and although no tubercle bacilli had been found in the sputum, even after six weeks' inoculation of a guinea-pig, she had been discharged with a provisional diagnosis of pulmonary tuberculosis.

She became increasingly drowsy and stuporous, her neck became stiff, and her temperature rose to 38·3° C. (101° F.). On March 13 Dr. Mary Hudson made a lumbar puncture and drew off fifteen cubic centimetres of very slightly turbid fluid, in which a "spider web" clot formed, and in this clot two or three tubercle bacilli were found, the diagnosis thus at length being clinched. The cerebro-spinal fluid contained 0·597% of chlorides, 0·16% of protein and a trace of glucose.

On March 16 her temperature rose to 39·4° C. (103° F.) and she died.

At the *post mortem* examination there were found dense pleurisy over the right lung, typical fibroid phthisis and tuberculous bronchopneumonia, with some recent miliary tubercles.

It must be rare for a diagnosis in pulmonary tuberculosis to be so long delayed, despite investigations so thorough, and to be definitely decided only by lumbar puncture.

Pulmonary Tuberculosis Twenty-Three Years After Successful Treatment with Tuberculin.

In 1907, Mr. F., aged sixteen years, was thin and out of sorts and had a very slight cough; his brother had open pulmonary tuberculosis. He was referred to Dr. Camac Wilkinson, who found high-pitched, feeble breath sounds below the middle third of the right clavicle, tested with old tuberculin, found him react and treated him with "P.T.O." and "P.T." He did very well, and in 1914 was big and strong, weighing 76·4 kilograms (twelve stone one and three-quarter pounds), lightly clad. He had a very slight cough, but did not react to 0·11 cubic centimetre of old tuberculin, although the breath sounds were harsh and the vocal fremitus increased at the old site.

In 1930, while in robust health and weighing over 81·9 kilograms (thirteen stone) he died suddenly from trauma. The coroner and his pathologist kindly allowed me to see the *post mortem* examination. The body was large and muscular, with but little fat. On the outer side of the right pulmonary apex there were a few adhesions of the parietal and visceral pleura, and on separation there was found a puckered, depressed scar, and under it a dense fibrosis of about the size of a split pea. The above were the only lesions found in the body except those of the recent mortal trauma.

Tuberculous Iritis Treated with Tuberculin.

Mr. B.C., aged twenty-three years, was referred to me on June 29, 1916, by Dr. Francis Antill Pockley, suffering acute pain from an iritis of the right eye, which, from its peculiar nature, Dr. Pockley thought tuberculous. As he had previously lost the sight of the left eye, he was naturally extremely anxious. He weighed 63·9 kilograms (ten stone two pounds), felt ill, had a very slight cough and slight dulness with broncho-vesicular breath sounds at the right pulmonary apex. He reacted to a test dose of old tuberculin, his arm was sore, red and swollen, his temperature 37·8° C. (100° F.), and there was an increase of the iritis, which latter Dr. Pockley confirmed. All subsided in two or three days, and a week later treatment was begun with hypodermic injections of "P.T.O." in increasing doses so as to reach from 0·002 cubic centimetre up to 0·48 cubic centimetre on September 11. "P.T." was then used, up to 0·77 cubic centimetre, on April 19, 1917, when his weight had increased to 67·5 kilograms (ten stone ten pounds), his cough had ceased and the iritis subsided.

In April, 1920, he had conjunctivitis due to hay fever. After recovery from this his weight was 70·6 kilograms (eleven stone three pounds), and he was tested with seven doses of old tuberculin, increasing from 0·0015 up to 0·11 cubic centimetre without any sign of general or local reaction and without any reaction either in the pulmonary or ocular lesion. During the test his weight increased from 70·6 kilograms (eleven stone three pounds) to 72·0 kilograms (eleven stone six pounds).

In 1921 he was very well.

In 1932, on a chance encounter in the street, he told me that he was very well, that the sight in his right eye was very good, and he had had no further trouble with his eye.

Reviews.

DEVELOPMENT.

"THE EXPERIMENTAL ANALYSIS OF DEVELOPMENT", by Bernhard Dürken, of the University of Breslau, is a much needed survey of a highly important branch of modern biology.[1] It is by a master, too, who has had the valuable experience of writing a much larger work on the same subject for the specialist.

The author points out in his introductory chapter that no other function of living things characterizes life so exactly as development. Wherever there is life, there is always development; for not only does the term comprise those events which, starting off with the fertilized egg, lead to the formation of an individual (embryonic development); there is development preceding this, and there is development following it. There are the histological changes and the later structural changes which continue even to death, and, more striking perhaps, the phenomena of regeneration.

The experimental study of embryology which led to the exploitation of the subject in its wider form only commenced with the pioneer work of Wilhelm Roux, a pupil of Haeckel. It seems a far cry now to 1881, when the subject of developmental mechanics (*Entwickelungsmechanik*) was launched, to be followed during the succeeding years by a remarkable and ever-increasing number of publications. Yet, somehow or other, the results have continued to be amongst the most unfamiliar to students of biology (in the widest sense of the word). Probably this is because little in the nature of a complete survey of the subject has hitherto been published.

It was in 1888 that Roux made his famous experiment of destroying one cell of a frog's egg, which had just divided into the two-cell stage, without injuring the other. The live cell developed into a half embryo. The experiment seemed to show conclusively that one cell (of the two-cell stage) contained the "factors" for half of the frog, the adjoining cell those of the other half. But even the most simple and clear experiments in biology can deceive, and this is one of them. A few years after Roux's experiment Driesch showed that if the dead cell was just removed, the remaining cell developed into a whole embryo. It is practically from this work of the decade 1890 to 1900 that the science of experimental embryology rapidly grew.

It is very interesting to notice that, commencing with a "mechanistic" bias and a tendency to explain development entirely as the result of a comparatively simple summation of chemical and physical factors, the experimental study of development has produced some of the most brilliant exponents of, shall we say, "vitalistic" theories. Dürken emphasizes the point that the study of the mechanics of development "leads away from the mechanistic conception to a really organismic conception of the organism and therefore of life itself". So the pendulum swings.

It is very difficult to summarize the contents of a work of this kind. The early chapters deal critically with the study of possible discrete factors in the egg which may determine the following embryological development. The factors of the environment are then separately considered, and arising out of this Dürken reviews critically the still debated question of the inheritance of acquired characters. The author appears to be also very critical of the chromosome theory of development.

Altogether the work is a valuable contribution to the general literature of modern biology, perhaps especially to those specialists in other branches (even including psychology), to whom a knowledge of the results of the experimental study of development is long overdue.

The English translation seems to be adequate.

[1] "Experimental Analysis of Development", by B. Dürken, translated by H. G. and A. M. Newth; 1932. London: George Allen and Unwin, Limited. Demy 8vo., pp. 288, with illustrations. Price: 14s. net.

MIDWIFERY AND THE CARE OF INFANTS.

DR. T. F. CORKILL has published his lectures to midwives, post-graduate nurses and medical students at Wellington, and with the approval of the Dominion Health Department they now form the standard text book on the subject for New Zealand nurses.[1]

The book is of interest, not only because of the practical way in which it has been written, but also for the clear account of the various methods adopted in New Zealand to reduce the risks of infection during labour and the puerperium. In keeping with modern teaching, the preventive aspect has been stressed throughout the lectures. The chapter on ante-natal care is particularly well written, and contains an excellent summary of recent work on the importance of vitamins to the prospective mother and her infant. The duties of a nurse as regards the ante-natal investigation of a case, and in particular, urinalysis, blood pressure estimation and pelvimetry, are discussed in detail. The aseptic technique of labour and the puerperium, insisted upon by the Health Department, is described by one who has obviously found it applicable to private as well as hospital practice. There is an excellent summary of the drugs and antiseptics in common use in obstetrics. Some exception may be taken to the rather detailed account of chloroform anæsthesia, but in New Zealand the nurse is allowed to administer chloroform at the end of the second stage. Abnormal states are discussed in greater detail than is usually considered essential for a nurse. The author forestalls criticism by maintaining that the majority of obstetric nurses, being already generally trained, prefer to have an intelligent understanding of the various steps in treatment. Although some of this detail may probably confuse the average trainee, a paragraph is placed at the end of each section clearly summarizing the responsibility of the nurse in such abnormalities. The management of breech delivery might have been given in greater detail, even if the nurse is advised to seek medical aid in all such cases. There is a valuable chapter summarizing the causes and possible results of obstructed labour, while *post partum* hæmorrhage and puerperal infection have been adequately described. The most promising chance of lowering the excessive natal and neo-natal infantile mortality lies in the better instruction of nurses and students in the details of infant care and feeding. This book is distinguished from the average text book by the amount of space—one hundred pages—allotted to this subject. The author deserves the warmest praise for a most practical, exhaustive and lucid survey of the problems involved. As regards infant feeding, the methods of Sir Truby King are followed, but variations found necessary elsewhere are fully described. A good index is included and few typographical errors were noted.

Dr. Corkill is to be congratulated on a very valuable contribution, obviously based on a wide practical knowledge of the subject. Despite the lack of illustrations, these lectures can be thoroughly recommended as a reliable modern text book eminently suitable for use in the Commonwealth.

[1] "Lectures on Midwifery and Infant Care: A New Zealand Course", by T. F. Corkill, M.D., M.R.C.P.; 1932. New Zealand: Coulls Somerville Wilkie, Limited. Demy 8vo., pp. 419. Price: 12s. 6d. net.

The Medical Journal of Australia

SATURDAY, FEBRUARY 25, 1933.

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TUBERCULOUS DISEASE IN CHILDREN.

AFTER the discovery of the tubercle bacillus by Robert Koch it was generally held that tuberculosis in man and animals was the same. It was Theobald Smith in 1895 and 1896 who first showed that the pathogenic action of tubercle bacilli obtained from cattle was very different from that of tubercle bacilli obtained from other sources. Koch finally expressed the opinion that human and bovine bacilli could be regarded as essentially different organisms. This opinion has long ago been confirmed. At present medical practitioners are able to differentiate two mammalian types of tubercle bacilli, the human and the bovine, and the avian type of birds. In addition there are acid-fast organisms found in cold-blooded animals, related to, but distinct from, the mammalian and avian types. There has been much investigation and more controversy over the parts played by the human and bovine types of tubercle bacilli in disease in man. Gradually more light is being thrown on dark places and gaps in knowledge are being filled. The latest contribution is from John W. S. Blacklock, of Glasgow. A special abstract of his report is published in another place in this issue. This abstract has been prepared with a view to putting the salient features before the practising members of the medical profession; pathologists and bacteriologists will doubtless find it necessary to study the original report.

As pointed out by the Medical Research Council in the preface, it has been both asserted and denied that pulmonary tuberculosis is primarily an infection of childhood that may lie dormant and spring into activity later under the strain of rapid growth, occupation, fatigue or malnutrition. Blacklock's findings are opposed to this conception of tuberculosis, at least as far as the locality in which the observations were made is concerned. "In the adult it is different, both in its site and pathology, and, as a rule, it comes from a new infection contracted in later life." Blacklock's investigations into and his discussion on the primary lung lesion first described by Parrot are of the greatest interest and clinical importance. In view of the difficulty in identifying a primary focus, the fact that all the autopsies were conducted by him or under his direction makes his observations the more valuable. His findings should be studied with those of H. H. Scott, whose special report to the Medical Research Council was abstracted in these pages in August, 1931. For example, Scott found that the presence of tuberculous mediastinal glands was not always indicative of a pulmonary focus. Among 225 children who were described by Scott and who had caseous tracheo-bronchial glands, there were 29 or 13% in whose lungs no focus could be found. These figures are not very different from those of Blacklock. Pathologists will find interest in this aspect of the question. Blacklock points out that possibly the bacilli pass through the mucosa of the bronchi without causing any lesions or causing only lesions that heal rapidly. He also lays stress on the obvious possibility that the focus in the lung was so small that it was missed. The determination of the points shown to be doubtful in Blacklock's investigations may, as far as clinical workers are concerned, be left to morbid anatomists and bacteriologists; the clinical indications are clear.

Blacklock has shown that there are differences between the types of tuberculous infection in Scotland and those in England and other parts of the old world. These differences are only minor, and lest it be stated that the findings of workers

in Scotland might not apply to Australian conditions, we would draw attention to some work of Reginald Webster, of Melbourne, published in this journal in March of last year. Webster investigated the condition of 81 children with varied manifestations of tuberculosis, and of five adults with bone and joint tuberculosis. He found that bone and joint tuberculosis, bronchial gland and lung tuberculosis and tuberculosis of the brain and meninges were always due to the human strain of *Bacillus tuberculosis*. Tuberculosis of cervical glands and tonsils were found to be of bovine origin to a predominating extent, the number of bovine infections in a series of 24 cervical glands being 17. The small number of mesenteric glands examined by Webster all yielded bacilli of the bovine type. In no instance did he encounter the bovine bacillus outside the tonsils, cervical or mesenteric glands. The final conclusion from the preventive aspect is that steps must be taken to protect children from both types of organism. Some parents make almost a fetish of boiling milk before they give it to their children. If all parents could be taught that they should make a fetish of keeping their children from coming into contact with open tuberculosis in all its forms, a material reduction in tuberculous infection in children might be expected to occur.

Current Comment.

PEPTIC ULCER AND ALKALOSIS.

TUCKED away in an inconspicuous corner of MacLean's "Modern Views on Digestion and Gastric Disease" is a word or two of warning about the possible occurrence of alkalosis during the treatment of persons suffering from peptic ulcer. MacLean briefly discusses the symptoms of alkalosis, then goes on to remark that in his experience of 400 cases in which large doses of alkali were given, alkalosis did not occur once. MacLean is an authority on gastric disease, and his methods of treatment for peptic ulcer have been adopted, partially or wholly, by perhaps the majority of physicians in the British Empire. Many medical practitioners, especially the neophytes, accepting MacLean's teachings, are apt to skim over the few remarks on alkalosis and come to regard this condition as a curiosity, or to forget about it altogether. Undoubtedly alkalosis is rare, but it is not so rare as to be negligible; possibly it is considerably less rare than it is generally supposed to be; certainly, even when severe, its symptoms may be misinterpreted; milder symptoms may be overlooked or disregarded. Fortunately, recovery is the rule, however severe the symptoms, providing the condition is recognized and the administration of alkalis is suspended. The danger lies in a failure to interpret the symptoms correctly.

At the present time, when large doses of alkali are freely administered to great numbers of persons suffering from peptic ulceration, no doubt there are many medical practitioners who carry out this method of treatment without any thought of possible danger. A scientific investigation of alkalosis is, therefore, timely. The results of such an investigation form the subject of a recent paper by A. M. Cooke, of St. Thomas's Hospital, London.[1]

In a period of two years, about 200 in-patients at St. Thomas's Hospital were treated with large doses of alkalis. Fifteen of these patients developed untoward symptoms and were carefully examined by clinical and biochemical methods. Nine of the fifteen were found to be suffering from alkalosis.

Cooke remarks that in a typical case the patient is a man, aged thirty-five to fifty-five years, suffering from an ulcer of the stomach at or near the pylorus, not necessarily causing obstruction. There may be no evidence of impairment of renal function.

> After a week of intensive alkaline treatment he complains of headache, dizziness, backache, pain and tingling in the limbs, thirst, an unpleasant taste in the mouth, loss of appetite, with a particular distaste for milk, abdominal pain, vomiting, drowsiness and occasionally a craving for salt. Physical examination shows that he has slight fever, rapid pulse, slow respiration, and that he looks ill, with a shrunken, dehydrated, flushed face, furred tongue, and bloodshot eyes. The urine, strongly alkaline, contains protein and casts, and there is usually a diuresis. . . . Examination of the nervous and motor systems may reveal some heightened neuro-muscular irritability, more apparent on direct stimulation by tapping the muscles or by the galvanic current than by reflex stimulation. Sensory hyper-irritability is shown by the tenderness of the muscles on pressure. . . . At the same time the patient displays mental changes, of which the most striking feature again is hyper-irritability. A man usually of a complacent disposition becomes querulous and irritable, grumbling unreasonably about the most trifling annoyances, and may even have delusions of persecution.

No abnormality can be detected in the heart, lungs or abdomen. The hydrogen ion concentration of the blood plasma is slightly higher than normal as a rule. The carbon dioxide combining power of the blood is about 100 volumes *per centum*, against the normal 53 to 78. There is a pronounced degree of nitrogen retention; the urea nitrogen content is about 100 milligrammes per 100 cubic centimetres of blood, sometimes very much higher. The blood creatinine content and the plasma phosphate content are increased considerably above the normal. The plasma sodium chloride content is lowered to about 490 milligrammes per 100 cubic centimetres, that is 100 or so milligrammes below normal; the whole blood sodium chloride content is also greatly diminished. Cooke remarks that the simplest chemical procedures available for confirmation of the clinical diagnosis are estimation of the blood urea content and the silver nitrate test for the presence

[1] *The Quarterly Journal of Medicine*, October, 1932.

of chloride in the urine. The quantity of chloride in the urine during alkalosis is abnormally low.

If the administration of alkalis is continued after the development of severe alkalosis, the symptoms, especially drowsiness, become more pronounced; tetany develops, and is followed by convulsions, collapse, coma and incontinence of urine and fæces; death ends the story. If the administration of alkalis is discontinued early enough, clinical recovery is complete within three or four days; the abnormalities in the blood are corrected in about ten days, but chlorides are not excreted in appreciable amounts for about seventeen days; the protein and casts in the urine gradually diminish in amount, and disappear in a few weeks. The renal function, as tested by the usual methods, returns apparently to normal in a month or two. Cooke remarks that a patient who has once suffered from alkalosis is intolerant of alkalis ever afterwards. He thus suggests that alkalosis renders the patient susceptible to the action of alkalis. In the light of present knowledge, this cannot be unreservedly accepted; the patient may have been always intolerant of large doses of alkalis. Cooke also states that a patient recovered from alkalosis remains free of gastric symptoms for some months without treatment.

One of Cooke's nine patients died despite the cessation of treatment for his gastric disease. It was found *post mortem* that the ulcer was carcinomatous and that there was chronic interstitial nephritis to which had been superadded a terminal acute nephritis. It is of interest to note that the total amount of soluble alkali given to Cooke's patients was equivalent to 10·3 grammes of sodium bicarbonate per day; considerably larger doses of insoluble alkalis were given. Most of the medical practitioners employing MacLean's method would not give a greater quantity than this; many would give considerably less.

In discussing the possible causation, Cooke asks the following questions: (i) Is alkalosis due to aggravation of preexisting renal insufficiency? (ii) Are the kidneys damaged by the alkalis? (iii) Can the condition be attributed to extrarenal causes? He points out that none of his patients had passed protein in the urine before the commencement of treatment, but that two had suffered from scarlet fever in childhood. He mentions that Wildman and others have suggested that hypochloræmia is the main cause of the symptoms, and he remarks that patients receiving "alkaline" treatment take two to three grammes of salt only per day, instead of the normal ten to fifteen grammes; he points out, however, that other conditions causing hypochloræmia are not associated with an increase in the blood urea content. He suggests that "in some way alkali excretion is impaired, and the resultant alkalosis lowers renal efficiency. A vicious circle is set up in which increasing alkalosis diminishes renal efficiency" and renal inefficiency aggravates alkalosis.

The value of the "alkaline" treatment for peptic ulceration has been abundantly proved; this comment on Cooke's important paper is not made with the object of deterring anybody from employing it. The main objects are: first, to draw medical practitioners' attention to the occurrence of a dangerous disorder resulting from the ingestion of alkalis; secondly, to warn each medical practitioner to bear the possibility of alkalosis in mind when commencing medical treatment for peptic ulceration, and to keep a watch for alkalosis during the progress of treatment.

THE USE OF PHENYLHYDRAZINE IN ERYTHRÆMIA.

THE only drug known to effect definite clinical improvement in erythræmia or *polycythæmia vera*, as it is more often called, is phenylhydrazine. This drug was first used in the production of experimental anæmia in animals. It was given in erythræmia because of its specific effect in destroying erythrocytes. It is said that each gramme of phenylhydrazine destroys on an average six grammes of hæmoglobin. Since Eppinger and Kloss first used phenylhydrazine for purposes of blood destruction in 1912, a not inconsiderable literature has accumulated regarding it. Its use is not without danger and, because its action continues after its withdrawal, its administration should be stopped before the erythrocyte count reaches a normal level. Hæmolytic crises may be avoided if frequent estimations are made of the erythrocyte count, the leucocyte count and the serum bilirubin. Unfortunately phenylhydrazine, like every other therapeutic measure used in erythræmia, has only a temporary action. The effect is purely palliative, because the drug has no action on the fundamental excessive erythroblastic activity of the bone marrow.

H. Z. Giffin and E. V. Allen, writing from the Mayo Clinic, have recently reported results which do not accord with general experience.[1] They have observed, for periods varying from four to six years, thirty-seven patients suffering from erythræmia. When the initial course of treatment was given, it was found that the disease could be controlled by the administration of a small dose, such as 0·1 to 0·4 gramme each week. In some instances the dosage necessary for control was one which had been found in experimental conditions to be ineffective as far as hæmolysis was concerned—a dose such as 0·06 gramme per month. The finding that patients could be kept comparatively well in this way is of practical value, but more important is the suggestion that phenylhydrazine may have an inhibitory effect on the production of erythrocytes in addition to its action of erythrocyte destruction. Giffin and Allen state that their suggestion cannot at present be proved. In this regard it would be helpful to make *post mortem* studies when death has occurred from some intercurrent cause during phenylhydrazine treatment. Such investigations might throw light on the commonly held, though not proven, view that erythræmia is really a neoplastic condition.

[1] *The American Journal of the Medical Sciences*, January, 1933.

Abstracts from Current Medical Literature.

GYNÆCOLOGY.

Secondary Carcinoma of the Ovary.

A. SCHEPETINSKY (*Monatsschrift für Geburtshülfe und Gynäkologie*, July, 1932) discusses the frequency of metastatic tumours of the ovary. In the majority of cases the digestive tract is the site of the primary growth. The author quotes Döderlein as having found in 80 cases of ovarian carcinoma that the stomach was the primary focus in 13 instances. Schlagenhaufer reported 79 cases, with a primary gastric growth in 61. The details of a case are given in which, after resection of the stomach for pyloric carcinoma, bilateral solid ovarian tumours developed after an interval of three years. On section these were typical Krukenberg growths. He considers that in this case implantation metastasis had occurred, although it was not impossible that the cells had travelled by the lymphatic system.

Combined Intrauterine and Extrauterine Pregnancy.

G. L. DAWYDOW (*Monatsschrift für Geburtshülfe und Gynäkologie*, July, 1932) discusses the diagnosis of combined intrauterine and extrauterine pregnancy. He considers that it is very difficult to determine the presence of an early intact intrauterine pregnancy. If the uterus be emptied at this stage, great care should be taken to exclude any possible ectopic pregnancy. When induction is done at a later date—eight to ten weeks—the differential diagnosis is much simpler. A survey of the literature as well as of the result of a case which he presents in detail, shows that a preliminary curettage does not prejudice the patient if an ectopic pregnancy coexists. The latter may terminate as a tubal abortion, or a tubal rupture, or as a combination of both, as was illustrated in his case. The hæmorrhage noted in some of these combined cases may proceed from the uterine mucosa or from a tube filled with blood.

Adenocarcinoma of the Vagina.

GILBERT I. STRACHAN (*The Journal of Obstetrics and Gynæcology of the British Empire*, Autumn Number, 1932) points out that carcinoma of the vagina is an uncommon condition about which very little appears in the text book. The growth may be an epithelioma which may be primary and arise anywhere in the vagina, but more often a vaginal epithelioma is an extension of a cervical epithelioma, when it is mostly confined to the upper part of the vagina. Adenocarcinoma is much less common. It may be secondary to carcinoma of the body of the uterus. The rarest malignant growth in the vagina is a primary adenocarcinoma. The author reports two cases in detail, one in a patient aged fifty years and the other in a patient aged forty-eight. In both cases the vagina was almost completely filled with a large, friable, fleshy mass which was easily removed with the fingers. In both cases the condition disappeared and reappearance has been prevented so far by radium treatment. In reviewing the literature the author finds the occurrence of primary carcinoma of the vagina varies from 0·19% in a series of 65 collected cases to 0·43% in other series. The main interest is pathological. Glands are not normally found in the vagina which develops from the lower third of the fused Müllerian ducts and the urogenital sinus. But in the fornices glandular tissue has been seen from time to time by responsible observers. These structures are judged to be misplaced cervical glands, although they may be the remains of Gärtner's duct, especially in the antero-lateral vaginal wall. Several cases of simple adenoma of the vagina are reported in the literature.

Adenomyoma of the Uterus with Tuberculous Infection.

D. M. VAUX (*The Journal of Obstetrics and Gynæcology of the British Empire*, Autumn Number, 1932) reports a case of adenomyoma of the uterus with tuberculous infection as a condition which is comparatively rare. The patient was aged forty-six years. She had been married twenty years and had never been pregnant. Menstruation had become painful and profuse during the last six months. There were pains in the right side and backache lasting for fourteen days. She had an occasional slight cough, but had no sputum. There was no family history of tuberculosis. The uterus was enlarged and drawn over to the left side. Supravaginal hysterectomy was performed and as the uterine tubes and ovaries appeared normal to the naked eye, they were not removed. Examination of the uterus revealed a diffuse adenomyoma of the posterior wall of the fundus. The stroma of nearly all the islets of glandular tissue contained tuberculous granulation tissue, with a considerable number of giant cell systems. In the uterine portion of the left uterine tube there was no evidence of tuberculous infection. Examination of the urine failed to reveal tubercle bacilli. X ray examination of the chest did not show any evidence of tuberculosis. There are eight cases recorded in the literature of tuberculous infection of an adenomyoma. In three of these tuberculous infection of the endometrium and uterine tubes was present, and in one a carcinoma of the uterus was also present. In the other two cases the condition was also associated with carcinoma of the uterus.

The Surgical Menopause After Hysterectomy.

J. V. SESSUMS AND D. P. MURPHY (*Surgery, Gynecology and Obstetrics*, December, 1932) have investigated 91 patients under the age of thirty-six years who had been subjected to hysterectomy with the retention of one or both ovaries and compared them with a series of 52 patients who were subjected to hysterectomy together with bilateral oophorectomy. They analyse the menopausal symptoms which arose in both series of cases and conclude that the surgical menopause occurred in more patients, it took place sooner and was more severe after hysterectomy when both ovaries were removed than when one or both ovaries were retained. The duration of the menopausal changes was much shorter when both ovaries were removed. The authors conclude that when hysterectomy has to be performed during the child-bearing period, the best interest of the patient is guarded by conservative treatment of ovarian tissue.

The Genital Epithelium.

EMIL NOVAK (*American Journal of Obstetrics and Gynecology*, November, 1932), of the Johns Hopkins Medical School, has undertaken the study of the genital epithelium in different segments of the genital canal. He points out that there is a close kinship between these various epithelia, because they are all derived from the same mother tissue—the cœlomic epithelium. Tissues derived from the same mother tissue are not only closely related, but they possess a considerable degree of interchangeability. The author describes the occurrence of certain differentiation anomalies in the epithelium in the various segments of the genital canal. Thus in the tube he shows the presence of definite endometrial tissue; in the ovary he has found endometrial or tubal types of tissue, and even on the surface of the ovary patches of stratified squamous epithelium. He has shown that in the endometrium of the uterus there may occur either squamous areas or patches of tubal epithelium, and also in the columnar cell regions of the cervix there may occur stratified squamous cells and even tubal types of epithelium. The author is of opinion that there can be a considerable degree of intermutability of the genital epithelia under certain conditions, as a result of their common origin from the same mother tissue. This should be remembered in the interpretation of many pathological lesions, such as endometriomata. This would make it unnecessary to invoke the doctrine of implantation in explaining such lesions. He considers also that the data obtained from the study of these ovarian epithelia are a strong argument in favour of the germinal epithelium origin of serous cystadenomata, for they are often lined by epithelium indistinguishable from that of the tube.

Carcinoma of the Body of the Uterus in Childhood.

JUDSON B. GILBERT (*American Journal of Obstetrics and Gynecology*, September, 1932) has reported the occurrence of carcinoma of the body of the uterus in a girl aged eleven. The uterus and tubes were removed. The diagnosis was established microscopically. Five other cases of car-

cinoma of the uterus in girls have been reported in the literature. Carcinoma of the uterine organs in childhood is very rare, but it should be borne in mind in all cases of irregular bleeding in young girls. The diagnosis should be established by examination under anæsthesia. The treatment should be surgical, if possible, but radium and deep X ray therapy can be used if the condition is inoperable.

OBSTETRICS.

Polyneuritis Gravidarum.

K. M. WILSON AND P. GARVEY (*American Journal of Obstetrics and Gynecology*, June, 1932) investigated in detail three cases of *polyneuritis gravidarum* which came under their care. They carried out a full biochemical examination, and in two instances a *post mortem* examination. The condition seems to be due to a mild alkalosis, although a compensated one. The patients all present much the same symptoms: a history of hyperemesis, mental confusion and weakness or paralysis of varying degrees. After the interruption of the pregnancy a temporary improvement resulted, but all the patients died. The only *post mortem* finding was on section of the nerves; a neuritis of toxic type was found. The author believed that this neuritis, when present to a less degree, may account for some of the nerve conditions that occur in pregnancy and sometimes in the puerperium, varying from a complete paralysis of the muscle affected to pain and tingling in the area supplied by the nerve.

Hyperemesis Gravidarum.

K. HELLMUTH (*Münchener Medizinische Wochenschrift*, April 15, 1932) discusses the ætiology and pathology of *hyperemesis gravidarum*. He considers that the occurrence of hypercholesterinæmia is of considerable importance. For the mild and moderate cases he found that the preparation "Gravomit" is of exceptional value. This is composed of acid tetra-acetyl-glycocholicum, dried ox bile, cerium isovalerianate, soda bicarbonate and calcium carbonate. While salts of cerium have well known effects, the results which he has obtained point to the equal value of the bile-containing substances. The drug is not tolerated on an empty stomach and should be given after a meal or drink of tea. In severe cases intramuscular injections of an oily solution are preferable.

Icterus Neonatorum.

K. J. ANSELMINO AND F. HOFFMANN (*Münchener Medizinische Wochenschrift*, July 29, 1932) discuss the ætiology of jaundice in the new-born and suggest that it is due to a reacclimatization effort of the fœtus to adapt itself to extrauterine existence. The fœtal blood is known to have a marked oxygen deficiency, not more than one-quarter of that of normal arterial blood. An interesting comparison is made with the results of the Everest expedition. At 8,500 metres the lack of oxygen reached the maximum amount which human beings can stand. This altitude would have to be increased to 10,000 metres before the blood oxygen picture would resemble that of the *fœtus in utero*. The fœtus acclimatizes itself to this state, just as the mountaineer, by an increase in pulse rate, cardiac hypertrophy and an increase in the number of red cells and hæmoglobin. In addition there is an increase in glutathion and katalase ferment. At birth the fœtus resembles the mountaineer who has descended to low levels. The excess hæmoglobin is converted to bilirubin, which remains in the blood stream for at least a week. The next problem is to explain why this excess bilirubin should be present at birth before respirations are established. The authors consider that this is due to the increased number of red cells and hæmoglobin and also to the effect of uterine contractions. To explain the fact that 20% of all infants do not show any jaundice, they consider that there probably exists for every child a threshold above which the bilirubin may not rise, and hence no jaundice is noted. It may also be concerned with the permeability of the peripheral capillaries; when this is not marked, no jaundice ensues. This factor can be demonstrated by the intracutaneous injection of histamine, which will produce a localized artificial jaundice in all cases, whether icterus be present or not.

E. HUKS (*Monatsschrift für Geburtshülfe und Gynäkologie*, July, 1932) has investigated the ætiology of jaundice in the new-born. The various theories are summarized and discussed. The author has paid special attention to the potassium ferrocyanide reaction of Brugsch. In a series of 100 cases 1% was injected intracutaneously, and in two-thirds of the series a positive blue reaction to iron in the skin was noted. Occasionally a positive result was observed in non-icteric infants. These results would tend to show that the jaundice was produced by an abnormal destruction of red cells in the reticuloendothelial system.

"Thymophysin."

F. ROQUES AND D. H. MACLEOD (*The Journal of Obstetrics and Gynæcology of the British Empire*, Summer Number, 1932) compare the results obtained when one hundred *primiparæ* were treated with "Thymophysin" with those obtained with one hundred in whose treatment the drug was not used. They found that the average duration of labour was almost the same in both groups. When the labours were subdivided into subgroups of six hours and under, those in which "Thymophysin" was used were not shorter than the other group. The authors conclude that "Thymophysin" did not have any appreciable effect in reducing the duration of labour in any of its stages. It caused tetanic contractions of the uterus; these are due to its pituitrin content, which Dodds worked out to be about one-fifth the strength of pitocin. The incidence of perineal laceration and the use of forceps were the same in both groups. The authors feel that they cannot recommend the use of a drug which contains and which owes its whole action to pituitrin.

Induction of Abortion with Pastes.

H. SELLHEIM (*Monatsschrift für Geburtshülfe und Gynäkologie*, March, 1932) was satisfied with the method of inducing abortion by the intrauterine injection of "Interruptin" until he had a death after eighty successful cases. Deaths may be due to air or fat embolism or to perforation of the uterus and subsequent peritonitis. These causes should be preventible, being due to errors in manufacture or to gross failures in technique. Some deaths result from unknown causes and the author considers that they are due to a toxic action produced by interaction of the various drugs employed in the preparation. In addition, his experiments show that the paste may get into the vascular system after rupture of the decidua during injection. So far he has failed to produce a non-toxic formula which will have a certain action in procuring abortion with safety.

G. A. WAGNER (*ibidem*) strongly discourages any use of intrauterine pastes to procure abortion, not only because of the published mortality associated with their use, but also because of the severe symptoms frequently produced. Only 25% of his cases were successful and free from complications. In many instances the ovum remained undisturbed for five to six days and the uterus had to be emptied by operative measures. Severe hæmorrhage and pain were noted in others during the expulsion of the ovum. Incomplete evacuation of the uterine contents was not uncommon, and in one case severe sepsis occurred. In particular the author issues a warning against the use of paste in threatened abortion because of the risk of the paste entering the blood stream.

J. H. LEUNBACH (*ibidem*) considers that the induction of abortion with pastes is not suited for general use. The dangers already noted will be greatly diminished when preparations are used which are free from air and fat and are soluble in water. They should contain no free alkali nor toxic substances. Their use during the first six weeks is not advisable because of the risk of the paste entering the blood stream through injuries to the blood vessels. Between six and twelve weeks the use of paste is a good method, although a curettage is often needed to remove fragments of the ovum. The author claims the use of pastes to be the best and easiest method from the third to the fifth month, and from his experience it is equally valuable in the induction of labour at term.

Special Abstract.

TUBERCULOUS DISEASE IN CHILDREN.

THE Medical Research Council of the Privy Council has issued a special report on the subject of tuberculous disease in children.[1] The report is devoted to the pathological and bacteriological aspects of the subject and is from the pen of Dr. John W. S. Blacklock, Lecturer on the Pathology of Diseases of Infancy and Childhood in the University of Glasgow, and Pathologist to the Royal Hospital for Sick Children, Glasgow.

The investigation dealt with infants and children from a few hours old up to thirteen years of age, who were admitted to the Royal Hospital for Sick Children, Glasgow, on account of illness or as a result of accident, during a period of seven years and eight months—March, 1924, to November, 1931. The children were for the most part those of poor or working class people, and most of them lived in Glasgow or in the surrounding districts. The autopsies, 1,800 in number, were consecutive, and therefore, as far as Blacklock was concerned, were not selected. Blacklock points out, however, that there was a certain amount of selection in favour of non-tuberculous cases. There was also the possibility of selection outside the hospital, since many of the children suffering from more chronic conditions were sent by their medical attendants to special hospitals, to special tuberculosis clinics and hospitals. Such selection must be expected. Blacklock is of the opinion that no strict comparison can be made of the number of cases manifesting tuberculous lesions with similar statistics from other hospitals. This, he thinks, applies more particularly to reports of investigations on this subject published in the past, when special facilities for treatment were not so available as they are at present.

The material studied by Blacklock came from two sources. He made a pathological study of definite and suspicious tuberculous lesions occurring in 1,800 *post mortem* examinations. The autopsies were all performed by Blacklock himself or under his personal supervision. The criteria of what was considered to be a tuberculous lesion were constant throughout the whole series. The second source of tuberculous lesions consisted of 65 specimens sent for examination from the surgical wards. The ages of the children in this group ranged from seven months to thirteen years, 11, or 16·9%, being under the age of two years.

Isolation of the Infecting Organisms.

Blacklock gives details of the methods used for the isolation of the infecting organisms. These will not be described; those interested will have to consult the report. Isolation of the infecting organisms from material taken at necropsy or at operation was successful by means of: (*a*) antiformin and culture in 170 out of 263 experiments; (*b*) direct culture from fresh tissue in 12 out of 28 specimens; (*c*) guinea-pig inoculation with 59 strains when (*a*) and (*b*) had failed. Of the 241 strains thus isolated, 189 were obtained from tuberculous lesions found at autopsy, six of these being isolated both from primary and secondary lesions, making a total of 183 different strains. The remaining 52 strains were isolated from material sent from the surgical wards.

It is interesting to note that in three cases culture on egg media gave positive results, while guinea-pigs inoculated subcutaneously at the same time and from the same specimens as used for culture, but with a dose many times larger, showed no tuberculous lesions when killed two months or more later. Further, no tubercle bacilli were recovered from these animals, either on culture or inoculation of their tissues into a further series of guinea-pigs. On subcutaneous inoculation of 0·01 milligramme of moist bacilli obtained from cultures of these three organisms, lesions were produced in guinea-pigs, although for this animal and for the rabbit the virulence of these strains appeared to be lower than usual. After pointing out that these strains did not correspond to the avian type and that the lesions produced by them were not like those produced by avian type bacilli, Blacklock adds that culture of material suspected of containing tubercle bacilli is worthy of trial.

Determination of Type of Infecting Bacillus.

Of the 241 strains isolated, 152 were of the human type and 89 were of the bovine type. One hundred and eighty-one strains (94 human and 87 bovine) were typed both by the results of culture and inoculation of rabbits. Of the 60 strains not tested for virulence, 54 were typically eugonic on culture, and it was not considered necessary to type them in addition by animal test. Six strains (four human and two bovine) had been isolated from secondary lesions and corresponded in their cultural characters to the strains obtained from the primary lesions which were typed by both culture and animal test.

The General Distribution of the Tuberculous Lesions.

Of the 283 cases in which tuberculous lesions were found at autopsy, the greatest number occurred in the first year of life; the next most numerous group occurred in the second year. When these tuberculous cases were expressed as a percentage of the total autopsis of each age group, there was a steady increase in the percentage from birth up to the third year, when the maximum was reached. When Blacklock compared his results with those obtained by other workers at the beginning of the present century, a general reduction in the incidence of tuberculous disease was found throughout the whole of infancy and childhood. In the first two years of life nearly all the children in whom tuberculous lesions were found, died as a result of these; while from the fourth to the thirteenth year the tuberculous disease was the cause of death in 75·0%. Of all the 283 children with tuberculous lesions, 90·1% died as a result of the tuberculous infection. The percentage of cases in this series with positive tuberculin reactions corresponded in a general way with the percentage of children in the various age groups in whom tuberculous lesions were found at autopsy. Of the male children coming to autopsy, 13·5% were found to have tuberculous lesions, and of the female, 19·0%; and from the second year onward the percentage was always higher in girls than in boys. The seat of the primary tuberculous lesion was in the thorax in 61·1% of cases, in the abdomen in 35·7%, in the cervical glands in 2·1%; in 2·5% of the children the primary site of the infection was not found. Four cases had double primary sites of infection, one in the thorax and the other in the abdomen.

Cases with Primary Site of Infection in the Thorax.

Of the total 283 cases with tuberculous lesions, 173, or 61·1%, were considered to be due to primary infection of the thoracic tissues (lungs or lymphatic glands). Blacklock points out that in regard to the pathway of infection of the lung and the thoracic lymphatic glands, there has been great diversity of opinion. He refers to the writings of eminent authorities and to the experimental work of others, and he concludes that the available evidence does not allow of any definite conclusion regarding the alimentary system as the portal of entry of the infection in cases in which tuberculous disease affects only, or is most advanced in, the lung. He determined to look for the primary lung lesion described originally by Parrot, Kuss and others. This lesion has been described as being most often single and subpleural in position. Histologically this primary focus is composed of a localized patch of bronchopneumonia which manifests in most cases a tendency to heal. The lymphatic glands at the hilum of the lung are the seat of a similar tuberculous lesion or even of an earlier one as compared with that in the lung focus. Tuberculous tracheo-bronchial glands are seldom found without a corresponding lesion in the lung substance. Blackmore points out that the lungs are fairly sharply marked off into definite lymphatic territories which drain into the related tracheo-bronchial

[1] "Tuberculous Disease in Children: Its Pathology and Bacteriology", by John W. S. Blacklock, the Medical Research Council of the Privy Council, Special Report Series, Number 172; 1932. London: His Majesty's Stationery Office. Pp. 155, with illustrations. Price: 3s. net.

glands at the hilum. These glands are strictly regional and have no direct connexion with the lymphatic glands in the neck or abdomen.

Blacklock found a primary lung lesion in 148 of the 173 cases in which the first site of the infection was considered to be thoracic. Of the cases with primary foci, 133 had one each and in 15 the primary foci were multiple. In all the primary foci there was evidence of caseation, though in some further changes, such as cavitation, fibrosis or calcification had taken place. These primary foci were rarely found in children under three months old, and with this exception were most numerous in children under three years of age.

The primary lesions were found more often in the right lung than in the left, the right upper lobe being most frequently involved and then, in order, the right lower, the left upper, the left lower and, lastly, the right middle lobe. Blacklock draws attention to the difficulty of explanation of the right upper lobe as the commonest site and to the same difficulty in regard to the frequent localization of tuberculous lesions in the right apex in the adult.

The tracheo-bronchial glands in direct anatomical relation to the foci found by Blacklock were always diseased. The occurrence of the primary lesion in any particular lobe was the important factor in determining the distribution of the glandular lesions. Foci in the upper lobe caused in the first instance tuberculous adenitis in the superior tracheo-bronchial glands on the corresponding side; those in the lower lobes caused adenitis in the corresponding inferior tracheo-bronchial glands, while those in the middle lobe produced tuberculous disease in the right inferior group. A few exceptions to this distribution were found, but they were accounted for on anatomical grounds. In some cases there was spread of the tuberculous adenitis to the glands in the neck or to the lymph glands in the upper part of the abdomen, but this was always secondary to adenitis at the root of the lungs.

On studying the histology of the primary lesions, Blacklock found that they were of the nature of a localized patch of tuberculous bronchopneumonia and "thus due to inhalation of tubercle bacilli". None of the primary foci could be demonstrated to have a vascular origin, and if such was found in sections, the lesions were secondary.

It has been pointed out that primary foci were found in 148 of 173 cases in which the first site of infection was considered to be thoracic. In the remaining 25 cases no primary lung lesions were found, although in all of them some of the tracheo-bronchial glands were the seat of tuberculous adenitis. In 12 of these cases there were some points of similarity in the distribution of the glandular, and in five of the pleural and glandular, lesions to cases in which primary lung lesions had been found. The tuberculous lesions in the lungs in four other children were so extensive that a finding of a primary lesion was impossible. In the remaining four cases in which no primary lung focus was found, the paratracheal glands were the seat of the most advanced tuberculous disease.

In discussing the significance of the primary foci, Blacklock looks for proof, other than that offered by anatomical and histological appearances, that the foci had not a hæmatogenous or lymphogenous origin. He points out that in cases with the primary site of infection in the abdomen, 54, or 81·8%, were infected with bovine bacilli, and 12, or 18·2%, with human strains, while from the cases regarded as being primary thoracic infections 107 (97·3%) human and three (2·7%) bovine strains were isolated. From cases in which the primary lung lesion was found, only human types of bacilli were obtained either from the lesion itself or from the glands in direct anatomical relation. If the focus regarded as the primary lesion were of hæmatogenous origin, Blacklock points out that bovine bacilli should have frequently been found in view of the fact that bovine strains were isolated from 81·8% of the primary abdominal lesions in children from the same series of autopsies as those with primary thoracic lesions. Further, nine out of 26 (34·6%) of the tuberculous lesions of bones and joints were infected with the bovine type of bacillus. Tuberculous disease of bones and joints is always due to a blood-borne infection and the percentage of children with such lesions infected with bovine strains was almost thirteen times greater than in cases of primary thoracic tuberculosis. Blacklock concludes that the primary lung lesion is indeed primary and due to direct infection of the lungs through the air passages.

Primary Disease in the Thorax Due to Bovine Strains.

From three cases, considered as primary respiratory infections, bovine strains were isolated from tuberculous tracheo-bronchial glands. In these children no primary lung lesions were found and the port of entry may have been pharyngeal or abdominal. After discussing this possibility and pointing out that it is supported by the teachings of von Behring and Calmette, Blacklock states that the distribution of lesions in the tracheo-bronchial glands corresponded closely to cases in which human types of bacilli were isolated and primary lung foci were found. He concludes that it was most likely that the infection in these two subjects came from the lung. In support of this view he refers to records of open tuberculosis due to bovine strains of bacilli.

Secondary Lesions in Cases of Primary Thoracic Infection.

In nearly all the 148 cases with primary lung foci, except 14, secondary miliary or bronchopneumonic lesions, or, more commonly, a combination of these, were found in the lungs. No tuberculous lesions were noted in the lungs in only two of the 25 cases in which no primary lung foci were found; in the others there were secondary lesions similar to those found in cases with primary lung foci. In only five, or 2·9%, children, all of whom were over two years of age, a total of 173 who were regarded as suffering from primary thoracic infections, had the tuberculous lesions not been the cause of death. The conclusion is stated that in Scotland nearly all the children with tuberculous lesions in the lungs or tracheo-bronchial glands die in childhood as a result of the tuberculous disease. This conclusion is different from that reached by workers in America and on the Continent of Europe.

Cases with the Primary Site of Infection in the Abdomen.

In 101 cases (35·7%) of the total 283 cases with tuberculous lesions, the pathological evidence was in favour of the site of the first infection being abdominal. Of these, 18, all in children under five years of age, showed naked eye evidence of intestinal ulceration, chiefly in the lower part of the ileum. In all of these children the tuberculous lesions had caused death. All the children under one year of age with intestinal ulcers had been fed on cow's milk. In the remaining 83 cases no ulcers were noted, but the mesenteric glands, chiefly in relation to the lower part of the ileum, were the seat of tuberculous adenitis. Babies who were breast fed for nine months or till death, if death occurred before that time, suffered less from abdominal tuberculosis than infants fed on cow's milk. The greatest number of primary abdominal lesions were found in the second year of life, that is, at the period when children consume large quantities of raw milk. In the cases with intestinal ulceration there was more extensive involvement of the lymphatic glands, and secondary lesions were more frequent than in those without ulcers. All the cases with ulcers were fatal, while of the 83 patients without ulcers only 71·7% died of tuberculous disease. Abdominal tuberculous lesions were found to be less frequently the cause of death than thoracic, 24 out of 101 (23·8%) being found accidentally at autopsy.

From the abdominal lesions 12 human and 54 bovine strains were isolated. In infants in the first year of life only one human and no bovine infections were found in babies breast fed for nine months or until death occurred, if death occurred earlier, but in those fed on cow's milk two human and 14 bovine infections were found.

Blacklock finds it difficult to account for the greater frequency of the bovine type of infection in children in Scotland than abroad. There are no reliable veterinary statistics regarding open tuberculosis in cattle. He thinks that such factors as racial resistance, diet and climate are associated with the high incidence.

Cases with the Primary Site of Infection Elsewhere than in the Thorax or Abdomen.

In 13 cases the portal of entry appeared to be elsewhere than in the thorax or abdomen. In six the oldest lesions were in the cervical glands, and in only two of these had the tuberculous disease spread into the glands in the upper part of the mediastinum, but had not involved the tracheo-bronchial glands. From four cases with cervical gland tuberculosis two human and two bovine strains were obtained. In the remaining seven cases the primary site of infection could not be found.

Types of Bacilli Isolated.

From the children who died of tuberculous disease, 165 strains were isolated and of these 120 (72·7%) were of the human and 45 (27·3%) of the bovine type. The greatest percentage of human strains as compared with bovine was found in the first six months of life, and in children from five to thirteen years old. The highest percentage of infections with bovine strains occurred in the second year of life. Throughout all ages the incidence of infection with human bacilli was always higher than with bovine strains. From 18 autopsies in which tuberculosis was not the cause of death, and in which the infecting organisms were isolated, four were human and fourteen bovine strains.

From autopsy material 183 different strains were isolated and of these 59 (32·2%) were bovine; this percentage of bovine strain is much higher than that recorded for autopsy material from Continental children and just less than twice as high as that for similar material from English children.

Surgical Tuberculosis.

From surgical material taken from patients during life 52 strains were isolated. In ten autopsy cases tuberculosis was present as the primary lesion in the cervical glands in four, and in six subjects with the primary focus elsewhere there was a secondary tuberculous lesion in bones, the bacilli in these cases being isolated from the primary lesion. Thus a total of 62 surgical tuberculous lesions and associated strains were available for discussion. Of 28 cases of tuberculous adenitis, ten were infected with the human type of bacillus and 18 with the bovine type. In 26 cases of tuberculosis of bones and joints, 17 were due to infections with human strains and nine with bovine.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Women's Hospital, Melbourne, on July 20, 1932. The meeting took the form of a series of clinical demonstrations by the members of the honorary staff.

Toxæmias of Pregnancy.

DR. W. D. SALTAU showed a patient, aged twenty-six years, who had had two children. She had a previous history of a severe albuminuria with her first pregnancy in December, 1930. She had had pronounced toxic symptoms, and her systolic blood pressure was 170 millimetres of mercury. Her blood urea was normal, but her urea concentration figures gave a maximum of 1·4%. Labour was induced by means of a tube at eight months, and she gave birth to a macerated fœtus. Her albuminuria persisted throughout the puerperium, and she was ultimately referred to Dr. W. W. S. Johnston's clinic at the Melbourne Hospital. She was there closely observed and her albuminuria gradually cleared up. Her renal function tests improved, and on April 12, 1932, her urea concentration figures gave a maximum of 2·2%.

She was referred back to the Women's Hospital on May 3, 1932, being then eight weeks pregnant. There was no albumin, and function tests revealed a blood urea of 26 milligrammes per 100 cubic centimetres, and the results of her urea concentration tests were 2·35%, 2·47%, 2·57%. On June 17, 1932, tests were again taken and the urea concentration figures were 1·26%, 2·57%, 2·36%. Again on July 15 they were 1·06%, 2·02%, 2·13%.

Dr. Saltau pointed out that there had been no sign of any albuminuria during the present pregnancy, and the systolic blood pressure on July 15 was 116 millimetres of mercury. She was twenty weeks pregnant, and the chief interest in her case was whether she would be able to "carry on". It was noted that the results of the last tests were not quite so good as the previous results, and it was proposed to make tests at frequent intervals, and should the kidneys show further signs of failing function, then the advisability of termination would again arise. As she was a young woman and very anxious to have a child, it was hoped that with close supervision it might be possible to guide her through the present pregnancy.

Dr. Saltau's second patient was a woman, aged twenty-eight years, with two children. She had had one previous miscarriage. She was admitted to hospital on July 14 at 7 p.m. in a stuporose and confused condition, having been found unconscious by her husband two hours previously. There was a history of œdema of the ankles for two weeks previously. The urine was acid, with a specific gravity of 1·025 and was almost solid with albumin. The temperature was 36·1° C. (97° F.) and pulse rate 100. The systolic blood pressure was 170 and the diastolic 100 millimetres of mercury. Examination of heart and lungs revealed no abnormality. The *fundus uteri* was enlarged to thirty-six weeks. There was generalized œdema, very marked in the legs. There was a history of two fits before admission. She was given a copious bowel wash-out and compound mixture of senna, 90 cubic centimetres (three ounces), with magnesium sulphate, 12 grammes (three drachms), by mouth, which she vomited. She was later given 0·18 ml (three minims) of croton oil and compound powder of jalap, 12 grammes (three drachms).

She continued to have fits, there being six between admission to hospital and midnight, five hours later. There was no improvement in the general condition, and there had been no satisfactory bowel action. The patient was not in labour, and it was decided to empty the uterus rapidly by means of Cæsarean section. This was done by Dr. Ivon Hayes, under whose care the patient was. She was delivered of a living child weighing 2·02 kilograms (four and a half pounds). The patient had two more fits subsequent to operation, and there was some increase in her œdema. Next day she was given ten cubic centimetres of calcium gluconate and 300 cubic centimetres (ten ounces) of 10% glucose solution intravenously. Her condition improved, the œdema became less, and she commenced to secrete more urine, although catheterization was necessary.

At the time of the meeting her condition was quite satisfactory, there being not a trace of albumin and the œdema had practically disappeared.

Dr. Saltau said that although the great majority of cases of eclampsia would respond to conservative measures, such as thorough eliminative treatment with suitable sedatives, this patient was shown as one who did not respond, and as she showed no sign of coming into labour, the more radical Cæsarean section was decided on.

Dr. Saltau also showed a woman, aged twenty-one years, who had had two children. She had had one miscarriage two years ago at six months, there being no details as to causation. She had had scarlet fever eleven years previously. She had complained of pains in the abdomen and back for two months. There had been no headache, but she had been vomiting frequently after her meals.

She was admitted to the Women's Hospital on July 7, 1932. Examination of heart and lungs revealed no abnormality and the *fundus uteri* was enlarged to the size of a twenty-six weeks pregnancy. Her systolic blood pressure was 130 and the diastolic 70 millimetres of mercury. She was afebrile. The urine was found to be neutral and to contain "one-third" albumin. A catheter specimen showed the presence of pus cells and bacilli. Renal function tests made the day after admission to hospital gave the

following figures: Blood urea, 10 milligrammes per 100 cubic centimetres; the concentration figures were 1·14% (100 cubic centimetres), 1·65% (60 cubic centimetres) and 2·02% (66 cubic centimetres). The total excretion of urea for four hours was 3·4 grammes. She was given the usual eliminative treatment for four days. The albuminuria cleared up, but when her diet was slightly increased she again developed a marked albuminuria. The patient was very anxious to have a child, but as the albumin persisted and the results of her function tests were unsatisfactory, labour was induced by means of a tube. As she was still a long way from full term, it seemed futile to risk permanent kidney damage. This would have imperilled any chance her kidneys had of withstanding any future pregnancy.

Dr. Saltau's fourth patient was a *primipara*, aged twenty-four years. She was admitted to hospital on July 13, 1932. She had been quite well until fourteen days before, when she commenced to have some blurring of her vision. She also complained of some pain at the back of the neck and swelling of the hands.

It was found that her uterus was enlarged almost to full term. She had albuminuria, which varied between "one-quarter and one-half". The systolic blood pressure was 138 millimetres of mercury. The renal function tests showed blood urea 14 milligrammes per 100 cubic centimetres, and the urea concentration figures were 1·89% (50 cubic centimetres), 2·66% (86 cubic centimetres), 2·59% (70 cubic centimetres). The total excretion of urea for three hours was five grammes. She was given the usual eliminative treatment for four days, with no appreciable change in the amount of albumin. The results of her renal function tests were satisfactory, but since the albumin persisted after four days' treatment, and as she was almost at term, she was given medicinal stimulation treatment with castor oil, quinine and pituitrin. She came into labour and was delivered of a living child weighing 2·61 kilograms (five pounds thirteen ounces).

The patient was shown as an example of albuminuria which did not respond to treatment, thereby giving a definite indication for the termination of pregnancy. If she had not responded to the stimulative treatment, it would have been necessary to resort to tubal induction of labour.

Goitre and Pregnancy.

PROFESSOR R. MARSHALL ALLAN presented three patients to illustrate the effects of goitre and pregnancy.

Simple Colloid Goitre and Pregnancy.

E.W., aged eighteen years, a *primigravida*, had an enlargement of the thyreoid gland since puberty. Considerable increase in size occurred during pregnancy, causing tracheal pressure, but no toxic symptoms. There was much more exhaustion than was usually seen after a normal delivery. The puerperium was marked by insomnia for the first few days. The goitre subsided in size slightly, the circumference of the neck being 38·75 centimetres (fifteen and a half inches), as compared with 41·8 centimetres (sixteen and three-quarter inches) during pregnancy.

Professor Marshall Allan stated that the case was an example of enlargement of the thyreoid due to the stress of pregnancy, and that it also illustrated the usual improvement after delivery. Two questions arose, whether the gland would return to normal and whether operation should be considered before any toxic changes had time to develop.

Pregnancy and Secondary Graves's Disease.

L.S., aged forty-two years, with eleven children, had an enlarged thyreoid for seventeen years. Increase in size had been noted with each pregnancy, but no other symptoms were observed, except on one occasion twelve years ago. For the past three years, she had been attending a general hospital, where definite signs of myocardial degeneration were noted. No toxic symptoms arose until she was twenty-four weeks pregnant, when the adenomatous goitre was associated with marked tremors and nervousness, but no exophthalmos. The condition slightly improved with rest and Lugol's solution. The patient was seen in consultation with a cardiologist, when it was decided to allow the pregnancy to continue. A few weeks later severe toxic symptoms recurred, with the addition of exophthalmos and the other eye signs. This settled down with rest and sedatives, and the patient eventually fell into labour and was delivered of a living child four weeks premature. Gradual improvement was noted during the puerperium and the patient was sent back to the general hospital for observation.

The case illustrated the progressive effect of repeated pregnancies on an adenoma of the thyreoid. Professor Allan considered that the case had been badly managed in the past. Any patient who required three years' medical treatment, when definite pathological lesions were present, should have been treated surgically at a much earlier stage. There was marked pyorrhœa, which had not been treated prior to this pregnancy, and it raised the question whether it might not have been the original cause of the changes in the goitre. Even now Professor Marshall Allan considered that surgical treatment was necessary to prevent the risk of further permanent damage to vital organs.

Pregnancy After Thyreoidectomy for Primary Graves's Disease.

I.H., aged nineteen years, a *primigravida*, had been operated upon for exophthalmic goitre three years ago. She was well until she became pregnant, when the symptoms rapidly reappeared. The patient was admitted to hospital in labour in a hyperexcitable state, with exophthalmos and definite eye signs, tachycardia and tremors. Forceps delivery was undertaken because of maternal distress—a pulse of 140 and an increasing amount of albumin. The use of Lugol's solution in the puerperium caused definite improvement.

The case illustrated the definite disturbance caused by pregnancy in a case in which apparently a good post-operative result had been achieved. It also showed that a longer interval between operation and pregnancy was needed to avoid such recurrences. Under medical treatment the symptoms should soon disappear.

Severe Secondary Anæmia During Pregnancy.

Professor Marshall Allan also demonstrated two cases of severe secondary anæmia occurring during pregnancy. In both the cause of the anæmia was a marked pyelitis, and in one instance deficient diet was an additional factor. The blood counts and films resembled those of pernicious anæmia, although the colour index was not quite so high. Treatment consisted in rest in bed, with abundant fresh air and sunlight, thorough treatment of the pyelitis, a high carbohydrate diet and liver, both fresh and extract. In one case delivery was normal and rapid improvement occurred during the puerperium. In the other the degree of anæmia was so marked that blood transfusion was performed before induction of premature labour. The result was very dramatic and the patient left hospital looking many years younger.

Professor Marshall Allan referred to the three types of anæmia associated with pregnancy. The physiological type was fairly common and was apparently due to the withdrawal of iron by the fœtus and to the relative deficiency in red cells due to the increased volume of the blood. It was noted mainly in the third trimester and responded well to tonics and liver treatment. The pseudo-pernicious type or acute hæmolytic anæmia was well illustrated by the above cases. Here two factors at least were at work—destruction of the red cells by a syncytial toxin and a primary defect in the bone marrow preventing regeneration due to some general toxic process such as pyelitis. Reports from India would indicate that the severer grades were associated with deficiency disease. There was a characteristic triad of symptoms seen in both cases—asthenia, dyspnœa and œdema. Before delivery it was often difficult to combat the anæmia because of the presence of the *fœtus in utero*, hence the decision to empty the uterus in the second case, when it was seen that improvement was at a standstill. The third type, true

pernicious anæmia, was very rare in pregnancy, and its occurrence was largely doubted by many authorities.

Biological Diagnosis of Early Pregnancy.

Professor Marshall Allan showed mounted specimens of results of the Aschheim-Zondek test of pregnancy. Positive results with both male and female mice were demonstrated. The changes in male mice were considerable hypertrophy of the seminal vesicles to at least twice the size of those in control animals.

Congenital Embryoma Kidney.

DR. KATE CAMPBELL showed an infant, which weighed 3·31 kilograms (seven pounds six ounces) at birth. There was vomiting from birth, off and on, and a tendency to constipation. About the third day the infant was noticed to be pale. About the fourth day it developed physiological icterus, which was clearing. The child had lost about 0·39 kilogram (fourteen ounces) since birth.

On examination there was an irregular tumour present in the right loin, extending forward to the mid-line. The liver was palpable one and a half fingers' breadth below the costal margin, and could be differentiated from the tumour. The urine contained no albumin. Microscopically a few casts were present.

Œdema Due to Hypothermia.

Dr. Campbell showed an infant which was suffering from œdema due to hypothermia. Labour in the mother was induced by the Johns Hopkins method for toxic symptoms. Her systolic blood pressure was 160 millimetres of mercury and she had œdema of the face, hands and feet. The infant weighed 3·78 kilograms (eight pounds seven ounces) at birth. The following day the arms and legs, hands and feet were coarsely mottled blue and vivid red, the hands being quite scarlet and the feet only slightly less so. There was marked œdema present in the affected parts. The weight had increased 0·14 kilogram (five ounces) owing to the œdema.

The temperature would not register above 35·1° C. (95° F.) for eight hours. After the child was packed with hot bottles the temperature rose to normal, the œdema subsided and on the fifth day the weight had dropped to 3·3 kilograms (seven pounds eight ounces). The urine contained no albumin, but microscopical examination revealed the presence of urates.

Congenital Obstruction of the Bile Ducts.

Dr. Campbell also showed a baby which was suffering from congenital obstruction of the bile ducts. The mother had had twelve children. The child was born at home, and birth was apparently normal. The infant was blue at birth and was not expected to survive. Shortly after the birth the mother had a convulsion and was transferred to the Women's Hospital. She was mentally deranged for two to three weeks, but recovered. The mother's blood and cerebro-spinal fluid gave no reaction to the Wassermann test.

The infant was ill-nourished, with a mongoloid facies. About the second week jaundice appeared and increased in intensity. The motions were colourless and the urine was highly bile stained. About a week later a slight blood-stained discharge from the nose appeared. The Wassermann test applied to the infant failed to yield a reaction on two occasions and the father's serum also failed to give a reaction.

The infant was fed first on "Lactone syrup" milk and later on Nestlé's condensed milk. There had been a progressive enlargement of the liver, and the spleen was also palpable.

In spite of the failure to react to the Wassermann test, the child was given some antisyphilitic treatment. Three weeks ago it was put upon *hydrargyrum cum creta* and had received two small doses of "Sulfarsenol", 2·5 centigrammes and 4·0 centigrammes. The jaundice appeared to have lessened in intensity and the motions had become coloured. The infant was two months old.

Disorders of Parturition.

DR. P. G. BRETT demonstrated examples of disorders due to parturition.

The first patient was a *primipara* who had suffered a posterior vaginal wall and complete perineal laceration, involving the rectum, during the delivery of a 4·5 kilogram (ten pound) baby by the breech, with extended legs.

The second patient, a *primipara*, had a lacerated and partly separated urethra, caused by manipulation during the delivery of a full time fœtus obstructed in the pelvis on account of a face presentation with a posteriorly presenting chin. Delivery had been effected by craniotomy and cranioclast extraction.

Dr. Brett also showed two *multiparæ* who had had several children, and now, at the ages of sixty-five and forty-one respectively, had marked uterine prolapse.

Ovarian and Mammary Tumour.

DR. A. M. WILSON demonstrated cases of ovarian and mammary tumour. To compare the palpation in the former cases with that of an early pregnancy, a patient with a four months' pregnant uterus was shown.

Blood Cyst of the Ovary.

DR. SYDNEY ALLEN showed a patient with a bilateral blood cyst of the ovary. The history was very like that of an ectopic gestation and with that diagnosis she was operated on. A discussion followed as to whether these were luteal blood cysts or true endometriomata.

The Doubtful Vertex.

DR. J. S. GREEN showed six patients illustrating the "doubtful vertex". These will be reported in a subsequent issue.

Correspondence.

ANÆSTHESIA FROM THE GENERAL PRACTITIONER'S POINT OF VIEW.

SIR: In reply to General Practitioner's letter of December 28, 1932, concerning my article on "Anæsthesia from the General Practitioner's Point of View", he desires information about points, the first being "that ethylene is a drug not to be used by the general practitioner, unless he has been trained in its use, and has given a large number of anæsthetics". I will take the statement: "That it is not suitable for general practice" first.

Firstly, the apparatus for giving ethylene is heavy, cumbersome and very costly. To take this about from place to place, together with extra cylinders of gas, is really a labour of Hercules, but if a man were always going to the same hospital, and the apparatus was there, this cannot be objected to.

Evidently "General Practitioner" has not given any gas anæsthetics, for, if he had, he would find that it requires a considerable amount of skill and practice to adjust the various taps and valves on the machine to regulate the anæsthetic.

Secondly, there is often difficulty in getting the face-piece to fit properly on the patient and be gas tight, for, if leakages occur, the patient is very liable to come out of the anæsthetic.

Thirdly, it requires practice to know how deep the patient is under the anæsthetic, so as to get proper abdominal relaxation.

Fourthly, to give a long gas anæsthetic is a big strain on the anæsthetist, because the working margin is so fine, not on account of the danger of overdosage, but to keep the patient properly relaxed and under the anæsthetic. If a man is giving a number of gas anæsthetics, he becomes more or less automatic in adjusting the percentage of gases, but for a man who gives odd ones, it is my opinion that the anæsthetic, from the surgeon's point of view, will be most unsatisfactory.

With regard to my second statement that "ethylene is probably the safest of all anæsthetics", I undoubtedly feel

that it is. Nitrous oxide is less toxic admittedly, but after giving a considerable number of nitrous oxide and oxygen anæsthetics for deep abdominal cases lasting one and a half to two and a half hours, I found that there was considerable anoxæmia, and there was great difficulty in keeping the patient fully relaxed. This is largely overcome by giving ethylene and oxygen.

As regards the relative safety of the drugs, so far I am unable to find any definite statistics, but Chapman in a presidential address to the Southern Association of Anæsthetists on November 12, 1930, states the following: "We have had no complete review of the mortality rate since the advent of ethylene-oxygen anæsthesia, but from the few deaths reported, and the large number of times it has been used by the skilled and the unskilled, the mortality rate must be well above 1 in 10,000." When we take the figures of, say, Royal Prince Alfred Hospital, for twelve months when ether was used in all cases, we find that there were four to five deaths from anæsthesia per 10,000 operations. These figures speak for themselves. Also it is well to note that ethylene is generally given to very bad surgical risks, hence the greater liability to death.

With regard to the pharmacology of ethylene, I have now neither the time nor the space to go into the whole of this matter, but if "General Practitioner" desires to find out about this, he should consult some of the recent text books on anæsthesia and a journal called *Current Researches on Anesthesia and Analgesia*.

Yours, etc.,

MARK C. LIDWILL.

135, Macquarie Street,
Sydney,
February 2, 1933.

AN ECONOMIC COMMENTARY AND DIAGNOSIS.

SIR: I took pleasure in reading the letters of Dr. de Ennis, Dr. Trinca, Dr. Dane and Dr. de Siem, and wish to add that all doctors and their patients too should be concerned with the present economic situation, for as Dr. de Siem writes, economic crises are not inevitable. An elementary course should be included in every school's curriculum, and we would be better off if such were the case. All thinkers must have a knowledge of economics, doctors included.

The only reason I can find why people want another standard other than the gold standard, is that at present we have very little or no gold bullion in this country, we have spent it, and so we find it difficult to repay our debts on the gold basis as agreed upon. Dr. Dane, in his letter, is of the same opinion as no less an authority as Ruskin, who considered that you cannot support by preference one set of industries except at the expense of another set; and so we cannot support our secondary industries except at the expense of the primary industries and the industries of medicine and surgery.

A member of Disraeli's cabinet was of the opinion, in a debate on protection, that there was nothing more certain than that protection would take "the shirt off your backs". Protection has taken the shirts from the wool and wheat growers' backs as well as from those of the doctors and their patients. Witness the high price and quality of our ether and ethyl chloride and the small anæsthetic fees in return. The present cost of text books and journals, the high cost of surgical instruments and catgut for use by the general surgeons, also the special equipment used by the eye, and ear, nose and throat specialists in their private practices. On the medical side the high cost of proprietary drugs to the physician, the extracts of glands and foods of known vitamin contents. Under protection the costs to the profession are soaring higher and higher, while the incomes of their patients on a gold basis are dwindling to nothing.[1] [2]

[1] 1933: Basic wage in New South Wales is now £3 11s. 6d. 1/- in the £ off—net wage £3 8s. On a gold basis, our pound being worth 10s. 6d., the basic wage equals £1 14s. 3d.

[2] 1911-13: On a gold basis, wages were £2 12s. 6d. Few people realize this.

If flour, tea or sugar, any one of these commodities, were made the standard, our political economists should still make of them playthings with which to juggle. If protection is carried much further we will be forced to improvise in surgery and to fall back on the few drugs contained in the hospital pharmacopœias of a quarter of a century ago. But I have wandered from the original commentary.

There are many other economic factors at work against the doctor and his patient, and to enumerate them I would require the verbosity of a politician, so I will conclude, fearing that the voices of a few thinkers are drowned by the catch cries shouted out to appeal to the minds of millions of morons.

Yours, etc.,

JAS. J. WOODBURN.

185, Macquarie Street,
Sydney,
February 1, 1933.

THE NEW SOUTH WALES MEDICAL BOARD.

SIR: We have been waiting for the past six weeks in confident anticipation that a pronouncement would have been forthcoming from the Council of the New South Wales Branch of the British Medical Association in the matter of the new appointments to the Medical Board of New South Wales.

So far, however, the Council appears to have been silent and the whole business seems to be passing into the limbo of forgotten things. If this is allowed to occur, it will not be creditable to the British Medical Association.

It is quite true, as the leader in your issue of December 24 pointed out, that the appointment or dismissal of members of the Board is a matter for the Government's discretion, but it surely concerns the Association that some of its members should accept, without investigation, positions from which other members of its body were about to be ousted in so unceremonious and discourteous a fashion. What would be the attitude of the Association if (i) a hospital board or (ii) a friendly society were to approach certain members of the Association with a proposal to occupy all the medical posts on its staff and an allegation that the present holders of the posts in question were about to resign their positions? And how would the British Medical Association regard the action of the men who accepted such appointments without inquiry as to the true circumstances? Does it really make any difference to the ethics of the matter that in the hypothetical cases the acceptors would probably be struggling young men who had their bread and butter to earn, while in the actual case the positions were offered to and accepted by well known and prominent members of the Association, some of whom are on the Council itself? Surely not.

We are of opinion that the Council or the members of the New South Wales Branch of the British Medical Association should make a formal pronouncement of disapproval or approval of the action of those members of the Association who, without taking the trouble to investigate the circumstances, accepted positions, which at the time they were offered, were in the tenure of other well known and reputable members of the Association.

Yours, etc.,

EDWD. J. JENKINS.
W. H. CRAGO.
G. H. ABBOTT.
J. A. DICK.
W. G. ARMSTRONG.
A. MURRAY WILL.

Undated.

THE FUTURE OF MEDICINE AS A PROFESSION.

SIR: Dr. Davis's letter of January 28 has verily hit the nail upon the head.

Let us be a great army with (not without) a strong general to lead the way. Let that strong general issue the order that members are to withdraw their services

from the hospitals. We shall then find out which members, especially members of councils and medical boards, are prepared to resign from the hospitals in the interests of "medicine as a profession" instead of continuing with an axe to grind.

Yours, etc.,

"LODGE DOCTOR."

February 1, 1933.

Books Received.

THE PRACTICAL MEDICINE SERIES: GENERAL MEDICINE: Series 1932; 1932. Chicago: The Year Book Publishers. Crown 8vo., pp. 837, with illustrations.

THE PRACTICAL MEDICINE SERIES: THE EYE: Series 1932; 1932. Chicago: The Year Book Publishers. Crown 8vo., pp. 686, with illustrations.

HOMOGENEOUS X RADIATION AND LIVING TISSUES, by W. Moppett, M.D., Ch.M.; 1932. Sydney: Australasian Medical Publishing Company, Limited. Demy 8vo., pp. 133, with illustrations. Price: 12s. 6d. net.

THE 1932 YEAR BOOK OF RADIOLOGY: DIAGNOSIS, Edited by C. A. Waters, M.D.; and THERAPEUTICS, Edited by I. I. Kaplan, B.Sc., M.D., 1932. Chicago: The Year Book Publishers. Royal 8vo., pp. 750, with illustrations. Price: $6.00 net.

ASPASIA: THE FUTURE OF AMORALITY, by R. E. Money-Kyrle, M.A., Ph.D., with introduction by J. C. Flugel; 1932. London: Kegan Paul, Trench, Trubner and Company, Limited. Crown 8vo., pp. 141. Price: 5s. net.

BACTERIOPHAGE IN THE TREATMENT AND PREVENTION OF CHOLERA, by J. Morison, C.I.E., M.B., D.P.H.; 1932. London: H. K. Lewis and Company, Limited. Demy 8vo., pp. 32, with illustrations. Price: 4s. net.

RADIOLOGIC MAXIMS, by H. Swanberg, B.Sc., M.D., F.A.C.O., with Foreword by H. Schmitz, A.M., M.D., L.L.D., F.A.C.R., F.A.C.S.; 1932. Quincy (Illinois): Radiological Review Publishing Company. Large Crown 8vo., pp. 126. Price: $1.50 net.

CHIROPODY JOTTINGS, by E. G. V. Runting, F.I.S.Ch.; 1932. London: Faber and Faber, Limited. Crown 8vo., pp. 223, with illustrations. Price: 5s. net.

Diary for the Month.

FEB. 28.—New South Wales Branch, B.M.A.: Medical Politics Committee.
MAR. 1.—Western Australian Branch, B.M.A.: Council.
MAR. 1.—Victorian Branch, B.M.A.: Branch.
MAR. 2.—South Australian Branch, B.M.A.: Council.
MAR. 3.—Queensland Branch, B.M.A.: Branch.
MAR. 6.—New South Wales Branch, B.M.A.: Organization and Science Committee.
MAR. 7.—New South Wales Branch, B.M.A.: Ethics Committee.
MAR. 10.—Queensland Branch, B.M.A.: Council.
MAR. 14.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
MAR. 15.—Western Australian Branch, B.M.A.: Branch.
MAR. 15.—Victorian Branch, B.M.A.: Clinical Meeting.
MAR. 21.—New South Wales Branch, B.M.A.: Medical Politics Committee.
MAR. 22.—Victorian Branch, B.M.A.: Council.
MAR. 24.—Queensland Branch (B.M.A.): Council.
MAR. 28.—New South Wales Branch, B.M.A.: Council (quarterly).
MAR. 30.—South Australian Branch, B.M.A.: Branch.
MAR. 30.—New South Wales Branch, B.M.A.: Annual Meeting.

Medical Appointments Vacant, etc.

FOR announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser", page xiv.

BRISBANE MATER CHILDREN'S HOSPITAL, QUEENSLAND: House Physician, House Surgeon.

CHILDREN'S HOSPITAL, CARLTON, VICTORIA: Honorary Officers.

HOBART PUBLIC HOSPITAL, HOBART, TASMANIA: Junior Resident Medical Officer.

NEWCASTLE HOSPITAL, NEWCASTLE, NEW SOUTH WALES: Junior Resident Medical Officer.

NEW SOUTH WALES MASONIC HOSPITAL, SYDNEY, NEW SOUTH WALES: Honorary Officers.

ROYAL ALEXANDRA HOSPITAL FOR CHILDREN, SYDNEY, NEW SOUTH WALES: Honorary Clinical Assistant.

THE BRISBANE AND SOUTH COAST HOSPITALS BOARD, QUEENSLAND: Honorary Officers.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associated Friendly Societies' Medical Institute. Mount Isa Mines. Toowoomba Associated Friendly Societies' Medical Institute. Chillagoe Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their agreement to the Council before signing. Lower Burdekin District Hospital, Ayr.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

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All communications should be addressed to "The Editor", THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2.)

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad *per annum* payable in advance.